

# **A NEW TEXTBOOK FOR NURSES IN INDIA**

**Vol. 2**

## **FUNDAMENTALS OF NURSING**

**The Board of Nursing Education Nurses League  
Christian Medical Association of India  
(South India Branch)**

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Published by

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# A NEW TEXTBOOK FOR NURSES IN INDIA

Volume 2

FUNDAMENTALS OF NURSING

*First Edition*

Prepared by the Teaching staff of the School of Nursing  
of the Catherine Booth Hospital, Nagercoil, South India

*Second Edition*

Completely Revised by Miss Dorothy Finkbiner

*Published for*

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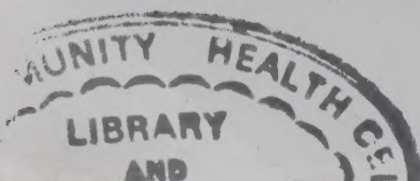
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## PREFACE TO THE FIRST EDITION

As with all text-books the "Text-Book for Nurses in India" has grown with the increasing complexity of the subject. The first edition produced by Sigrid C. Johnson in 1941 was a single volume which went to three editions in ten years. The first volume of 'A New Text-Book for Nurses in India' written by Miss Vera K. Pitman and Miss Lois M Marsilje was published in 1961 and was limited to "The Foundations of Nursing." It has been found advisable to approach the subject in a new manner in keeping with present trends in Nursing Education. This volume has been prepared by those actively engaged in teaching in the School of Nursing of this hospital. This is an international group. Each chapter has been read by other teachers and in particular a synthesis has been sought between Indian, British and American practice both the latter traditions having contributed to the development of the Schools under the Examination Board's jurisdiction. The writers have attempted to give a comprehensive coverage of subjects usually included in Nursing Arts.

The subjects dealt with in this volume are basic to nursing. In 1866, Dr R. G. Whitfield, Resident Medical Officer of St. Thomas' Hospital, London, when Florence Nightingale opened her first School of Nursing, and the first medical lecturer to nurses, replied to Miss Nightingale, who had sought his advice, 'Carefully avoid teaching nurses too theoretically; the medical men like



practical women nurses who can use their hands, are conversant with the usual medical requirements and able to give proper answers to their questions, but they do not care for women who enter into technicalities and use hard words which they do not know the meaning of. It is still vital that nurses are primarily skilled practitioners of their art, though it is to be hoped that they will now know the meaning of the hard words contained in their text-books.'

As chairman of the panel, I must add its appreciation of the work of editing and preparation of the index done by Mrs. Eileen Williams and the photographic assistance of Keith Willey, M. S. R.

**Harry William Williams**

**President of the Nurses' Examination Board  
of South India**

**Chief Medical Officer, Catherine Booth Hospital**



## PREFACE TO THE SECOND EDITION

A revision of **A New Textbook for Nurses in India, Volume II Nursing Arts** is long overdue. It has been used for a remarkably long time for a textbook dealing with rapidly advancing scientific knowledge.

Honor is given to all nurses and other professionals involved in preparing previous editions of nursing arts textbooks for the nursing schools of India. The authors prepared the textbooks while meeting many other demands in their spheres of nursing. Their writing skill and labor has helped to produce the many competent, respected professional nurses in the country today. Their contribution to the progress of nursing can never be measured.

Gratitude is due to the past and present staff of the **Board of Nursing Education of the Christian Medical Association of India (South India Branch)** for their encouragement to start the revision project and for their great patience in waiting for its completion. Their willingness to handle all the multitudinous details of publishing the book is appreciated.

Many changes, additions, and a total rearranging of subject matter have been felt essential in the revision process. Senior nurses will recognize old concepts with new names and, in some cases, a slightly different emphasis. Nursing trends that are valuable in improving nursing care have been included. No doubt there are others that it would have been profitable to add.

The writing of the material has been guided by a desire that it will be useful to both tutors and students and that it will be a helpful source of reference to graduate nurses. It is hoped that the tutors will find it a useful tool in teaching and guiding their students in the art of giving nursing care. The **Topics for Further Study** and



**Learning Activities** are included for the tutors' use in giving assignments as well as for the students' learning endeavors.

The revision has been done with a sincere wish that it will be helpful to nursing students in mastering the many procedures they will repeat again and again during their professional career. An effort has been made to explain why the procedures are important and the tremendous responsibility involved in performing them. It is hoped that the young women and men, who study this book in the course of pursuing a career in the nursing profession, will catch a vision of the joy, thrill and challenges of nursing. May each one be filled with awe of the marvels of the human body and the perfection with which it was conceived and created. May each one seek the guidance of the Creator in caring for his beloved creation.

June 1988

**Dorothy Finkbinder**



## EDITOR'S NOTE

This edition of the Text Book for Nurses in India Vol. II comes to you as a revised edition. You will find this book extremely useful for the learning purpose of students of General Nursing of present times.

On behalf of the Board of Nursing Education, N. L., C. M. A. I., South India Branch, I acknowledge with gratefulness all the efforts made by the Author Miss Dorothy Finkbiner in bringing out this edition up-to-date, on our request.

I have had great pleasure in editing this book. I am thankful to Miss A. Kuruvilla, President of this Board for her valuable help and guidance wherever necessary. I am also thankful to Miss S. V. Pothan, Secretary of this board for her assistance in editing and preparing some of the diagrams given in this edition.

We acknowledge our grateful regards for the prompt and efficient work done by the Manager and his staff of Evangelical Literature Service Press, Bangalore in printing this book.

We are thankful to B. I. Publications for being our stockist and distributor.

We would greatly appreciate any suggestions from teachers of Nursing and also correction if any which might have occurred inadvertently while preparing this edition.

K. V. Annamma, RNRM, MN  
Editor & Associate Secretary of  
Board of Nursing Education  
N. L. C. M. A. I., SIB

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## **UNIT I**

### **NURSING AND HOSPITALS**

## **CHAPTER 1**

### **INTRODUCTION TO NURSING**

#### **CHAPTER CONTENTS**

**Health care and nursing**

**Hospital organization**

**The hospital environment**

**The nature and scope of nursing**

**Social change and health care**

#### **LEARNING OBJECTIVES**

- 1. Concept of health care and nursing.**
- 2. The functions of a hospital.**
- 3. The departments of a hospital needed to care for patients effectively.**
- 4. Service expected of a nurse.**
- 5. Professional and personality characteristics necessary for a nurse.**
- 6. The meaning of caring for the "whole person."**
- 7. The effect of social influences and change on health and health care.**

# INTRODUCTION TO NURSING

## HEALTH CARE AND NURSING

In Vol. I of this book we have already discussed the development of nursing and in particular the development of nursing in this country. With that as our background we shall now look into what is 'Health' and health care.

In the past it was genuinely believed that there was a clear distinction between health and illness. In recent years it has become accepted by most people that there is no such clear-cut distinction between health and illness. Both health and illness are relative states of a person. As a person gets older, he tends to accept a few aches and pains as normal whereas a young person will consider these as symptoms of illhealth. Health and illness may indeed be viewed on a continuum that ranges from extreme poor health to peak wellness. Also concept of health and illness of the public is changing constantly according to their life styles. Hence health can be defined only in relation to the individual and his expectations and in relation to his optimum level of functioning in everyday living. It is health rather than illness, that is becoming the focus of our health services of today. We have now a more positive approach towards health — one that stress health promotion and the prevention of illness with restoration to optimum health as the goal of our therapeutic care. It is no longer the mere curing of disease.

World Health Organization has defined health in a Comprehensive manner that "health is a state of complete physical mental and social well being and not merely the absence of disease or infirmity." Since a person is not in complete health without spiritual health the spiritual aspect of the person is also included in the total health care.



When once we have established what is health in the modern thinking we come to the need of knowing what is 'health care.' The total health care services are described in the following, three levels of health promotion.

### 1. Primary Health Promotion

This is concerned with encouraging people to become as fit and healthy as possible, so that they are able to enjoy life to the fullest. It includes generalized health promotion as well as specific protection against disease. Immunizations against preventable disease, programmes for the promotion of nutrition, hygienic living, physical fitness and other family welfare programmes are some of the primary promotion programmes.

### 2. Secondary Health Promotion

This comprises the early detection of deviations from normal either in normal growth and development or in signs of illness. Diagnosis and treatment are the main aspects of Secondary promotion.. This includes the care and treatment of the ill on an inpatient basis in the hospital, on an out patient basis in a clinic or in the home.

### 3. Tertiary Health Promotion

This level of health promotion includes disability limitation and rehabilitation. The services at this level aim at restoring individuals and their families who have been ill or disabled to as full and independent a life as possible within the limitations of their disability.

Having come to know what is health and health promotion we shall now look into what is a **hospital** and its functions. In the Vol. 1 of this book we see that the historical background and development of modern hospitals are given in detail. But

it is good to have a brief review of it to understand the functions of hospitals of to-day.

While the main function of hospitals is care of the sick, they are excellent fields for teaching doctors, nurses and other health personnel. They provide the main practical learning area of the care of the sick. Some hospitals have become research institutions where health problems are studied intensively. New knowledge of diseases is gained and often more effective treatment is developed. Many hospitals are actively working to prevent disease and improve individual and community health through health education.

Hospitals are classified according to control or ownership and according to the type of service rendered. A large number are owned and operated by the national or state government. Religious groups, industries and private doctors own and operate the rest. When classified according to service rendered, they are known as **general hospitals** if they care for people with any type of disease or medical problem, and **specialized hospitals** when they care for persons with a particular health problem such as tuberculosis or cancer; or they may care for only children, only women or some other particular group. Nurses have an important role in each type of hospital.

### **A Community Service**

The purpose of hospitals is to serve the community. If people are to get help, they must know it is available. Education is important in motivating people to seek medical help when it is needed. There are many ways in which health care education is being done. Schools, newspapers, magazines, radio, television and various health personnel all have a part. However, the most effective means of persuading people to get needed medical care is a satisfied patient and his relatives. If they have felt loving concern along with obtaining



healing, they will encourage their friends to seek help from the same source when it is needed.

### **Hospital Organization**

Hospitals continue to become more complex institutions. Most hospitals have an administrator. Various departments help to meet the needs and provide maximum service to the patients. A patient is often sent to a number of departments for investigation or treatment. The patient will not go to some departments such as central stores or maintenance, but the departments will continually perform service for the patient's benefit and comfort. Most general hospitals with nursing schools will provide service through the departments of administration, finance, medical services, nursing service, outpatient, laboratory, X-ray, physiotherapy, pharmacy, diet, medical records, central sterile supply, central stores, maintenance, housekeeping and laundry. Some hospitals have additional departments. A nurse will frequently need to call upon someone in another department for assistance. She, therefore, needs to have a good understanding of their location, functions and how to obtain their services.

### **The Hospital Environment**

A hospital is made up of both physical and psychological factors and both affect patients. The physical features (buildings, equipment) may directly affect the physiological well-being of patients or they have a psychological effect which in turn influences their physiological progress. The hospital should be easily accessible to the people of the community it serves, but not near any industry that pollutes the air or water supply or that creates a high level of noise. A good water supply and a good sanitation system are basic necessities for a high standard of cleanliness. Clean surroundings not only provide a pleasing view to the patient, but aids in preventing infections and unpleasant odours.

The concern of the hospital staff has a strong influence on the patient's condition and progress. The patient needs to feel that the staff is interested in him; that they are concerned about his present and future well-being. There needs to be good relationships and cheerful co-operation between all staff members. The patient benefits from unity among those who care for him.

### THE NATURE AND SCOPE OF NURSING

The word **nursing** comes from the latin word **nutire** meaning "to nourish or cherish." The word nourish means to "supply that which is necessary to life." To perform professional responsibilities, a nurse must understand the functioning of the body in order to know what is necessary to life and be able to discern when body function is abnormal or when life is endangered. From her scientific knowledge, she plans nursing care that will prevent complications, that will assist in recovery from illness, or that will relieve suffering and provide a peaceful death when a cure is impossible.

Nursing in the past was associated with care of the sick. Until the end of the 19th century the sick were cared for at home by relatives or domestic staff. Later on hospitals were built where the sick were taken care of and nurses became increasingly involved with the curative and technical treatments provided by medical staff. Their duty mainly consisted of maintenance of everyday bodily and mental functions which are very important to the patient's comfort and so is important to him as a person. Nursing also consisted of assistance with complicated technical procedures associated with the disease condition. Their functions have been associated with the 'Sickness' and services to the sick.

With the development of biological and social sciences, greater emphasis is placed on the promotion of health and prevention of illness. A time will soon arrive that hospitals will be reserved only for acutely ill patients



who require highly specialized services. These trends in health care delivery system indicate a greater need for nurses who are able to work in the community and who can plan, organise and carry out health promotion and prevention of diseases programmes for all age groups.

Nurses working in hospitals will need even more highly developed skills to care for the acutely ill. For nurses this means a continuous renewal of knowledge and skills throughout their professional careers. The basic knowledge and skills you will gain from your introductory course in nursing should provide a solid foundation on which to build.

### **The Nurse as a Member of the Health Care Team**

The health team in a health care system may be as simple as consisting only of three members, the doctor the nurse and the patient or it may be a large team consisting of members of many other specialized fields of care like physical therapists and the occupational therapists, the dieticians and people who look into the spiritual and social needs of the patient. Each member of the team possesses unique knowledge and skill which he/she contributes to the total health care system.

There are also many areas of shared knowledge and skill eg. Communication skills, anatomy, physiology, psychology and sociology. The essence of the team concept is that all members work co-operatively for individual family or a community toward their common goal of attaining the highest level of health possible.

### **The Unique Role of the Nurse**

The International Council of Nurses has stated that the fundamental responsibility of the nurse is fourfold to promote health to prevent illness to restore health and to alleviate suffering.

In carrying out these responsibilities nurses assist individuals families and communities in the promotion of health and the prevention of illness. She cares for the sick, helping them to the restoration of health or providing comfort and support in the event of incurable disease. The nurse works in close co-ordination with a growing number of other health disciplines to provide health services for people. The scope of activities of the nurse to-day is much wider than what it was in the past. She cares for and about the patient. She participates in the detection and treatment of illness. She protects the patient from harmful factors that could endanger his health. She is an advisor and teacher on health matters. She is expected to co-ordinate the activities of other members of the nursing team and to work with a variety of people in other disciplines as a co-operating member of the health team. She also acts as a spokesman, or advocate, for the patient.

A professional nurse likes people, recognizes the individual worth in every person and wants to help each to the very best of her ability. She has pride in her profession and a desire to improve her knowledge and skill. She maintains a high ethical standard in all phases of her work.

### **Holistic Approach to Nursing**

Holism is the concept that parts unite to form a whole that functions as a unit. In regard to man, holism means that every part of man is related to every other part and by their working together, he functions as a man. It recognizes that man is more than a body. He has a mind and a spirit as well. Holism rests upon the idea that it is more profitable to study man as a whole than to study his separate parts. Man's body, mind and spirit are all related to his environment. He functions as a whole or a complete unit in the environment. The environment, in turn, has an effect on all three areas of man's being. Man can bring about



changes in his environment which may cause changes in his body, mind or spirit, or even in all three areas. Holism recognizes that each person is a member of a family and of a community. Family members and friends have an important role in the return to health of a sick person. Social stress, due to situations in the family or in the community may be responsible for problems of body function. Treatment of the health problems, in such cases, is fully successful only when the social problems are overcome.

Holistic health care is concerned with the whole person in his environment in the prevention and treatment of disease. Sanitation, climatic conditions, vegetation, the availability of food, and the water supply all have a part in maintaining health in the community and the individual.

Nursing seeks to help people understand the importance of all segments of their life and the environment to their well-being. It uses scientific knowledge to perform activities to prevent illness and to help those with health problems to regain vigor and joy in living.

### **SOCIAL CHANGE AND HEALTH CARE**

Social change taking place in the community must be considered in planning health care. There is change in the family living pattern. The centuries old custom of extended family is giving way to the children establishing a home hundreds and even thousands of miles from the parents. In many instances no one is left at home to care for the aging parents. Medical advances have increased the length of life expectancy. There is now a greater proportion of older people in most communities than were present fifty years ago. Chronic and degenerative diseases are increasing because more people are living to the age at which they commonly occur. The present trend is to provide outpatient and home care for the chronically ill and hospital care for the acutely ill.

There has been a rapid increase in urban population. Housing facilities and employment have often not been sufficient to meet the needs. The result is overcrowding and poverty in many urban localities. A high incidence of disease occurs in the impoverished areas.

Nurses are key persons in providing health care in our changing society. Health education has for a long time been considered a major nursing responsibility. That responsibility is increasing with our social trends. Nurses are accepted by the public as persons who are knowledgeable about health matters. Because nurses live in the community and have their own families, they are accessible to the people of the community. They are often called for help in emergencies or to give advice. A nurse is watched as an example for the health care she gives herself and her family.

### Summary

The concept of health has changed from a state of being free from diseases to a state of peak wellness. The meaning of health to an individual or community is based on his their level of optimum functioning in everyday living. The total health care services are described in three levels namely primary health promotion, secondary health promotion and tertiary health promotion.

Hospitals have a long, honorable tradition in India, dating back at least 2500 years. Today they are multipurpose in that they care for the sick, teach health personnel, carry on research, promote disease prevention and engage in health education for the community. People trained in a wide variety of specialized work are needed in a hospital for it to effectively meet the challenges of a community.

Nurses must be intelligent and well educated to give the nursing care required for coping with the advanced



scientific knowledge and technological equipment used in the treatment of illness. Care is directed, not only to the physical aspect of patients, but to their mental and spiritual needs as well. The whole person is involved in having a healthy body. Changes in providing health care will need to be made because of changing social patterns in local communities. Nurses must keep aware of changing needs.

### **Additional Study Topics**

1. The development of medical care and nursing in India.
2. Social changes in your community and in the nation and their relation to health care.

### **Learning Activities**

1. Make a list or diagram of all the departments and their location in your hospital.
2. Find examples of health education in a newspaper and a magazine.
3. Write your definition of nursing. Keep the definition. Write additions to it at the end of this course and again at the time of your graduation.
4. List the qualities of character you have observed in nurses you admire.
5. List reasons why a nurse needs good knowledge of scientific subjects.

## UNIT II

### THE PATIENT AND THE HOSPITAL



## **CHAPTER 2**

### **ADMISSION TO THE HOSPITAL**

#### **CHAPTER CONTENTS**

**Admission to the hospital**  
**Admission to the nursing unit**  
**Care of personal articles and valuables**  
**Orientation to the unit**  
**The patient's medical record**  
**The patient's reaction to illness**

#### **LEARNING OBJECTIVES**

- 1. Duties of the admissions officer in admitting a patient to the hospital.**
- 2. The role of an admitting nurse in a nursing unit.**
- 3. Activities necessary in admitting a patient to a nursing unit.**
- 4. Information the nurse gives the patient at the time of admission.**
- 5. Using and caring for the patient's medical record.**
- 6. Reactions of people to illness and the reasons for them.**

## ADMISSION TO THE HOSPITAL

Admission to a hospital is an unwanted experience for most people. It is filled with fears, yet with hope of overcoming an illness or injury. Sometimes the patient knows in advance and can make family and financial arrangements before admission. Frequently the illness or injury will have come suddenly with little or no opportunity for making plans.

Most patients will be seen first by a doctor in the outpatient department or in the emergency room. When admission is advised, it can be very disturbing and even frightening to the patient. Along with concern about his health problem and life itself, are concerns for the family, finances and changes in daily activity. It is, therefore, very important that every effort be made to help him feel he is in a place of sympathetic, caring people. The outpatient nurse has an important role in demonstrating a friendly, caring, supportive attitude. She usually takes or directs the patient to the admitting office.

An admissions officer is usually the first person to greet the patient in the admitting process. It is essential that admitting officers have a pleasing, courteous personality in order to gain the patient's confidence and help him feel he is in the right place for good care. The officer completes an admission record including the patient's name, address, date of birth, sex, marital status, occupation, doctor's name and admitting diagnosis. The patient is given a hospital number. An identification band may be placed on the patient's wrist at this time.

The admitting officer, an aide or a nurse will take the patient and his record to the appropriate hospital unit and introduce him to the nurse in charge.



A warm, friendly, respectful greeting from the admitting nurse is encouraging to the patient and his family. Her friendly manner and interest in his welfare will lessen his feelings of apprehension, insecurity and fear.

In emergency situations, the patient is taken directly to the appropriate unit and treatment started. When the patient has been cared for and his condition stabilized, the admission routine is completed.

The routinely admitted patient is assigned a bed. He may or may not be put to bed immediately. The patient's clothing and valuables are cared for according to the hospital's policy. They may be given to the family to take home. If the patient keeps his clothing and personal articles, a list is made of all the items and attached to the medical record. If money or other valuables are kept at the hospital, they are listed and kept in a hospital safe. Assist the patient into bed and to change clothing as necessary. Identification is placed on the patient's wrist and on the hospital bed according to the policies of the institution.

Help the patient become settled in his unit with articles he will need arranged conveniently. Provide fresh drinking water. Orient him to the unit as his condition permits. Explain clearly the location of toilet facilities and how to call a nurse. Explain about food arrangements and visiting hours. Answer the patient's questions.

If the doctor's orders have arrived, the nurse will begin their implementation. If there are no orders, the nurse informs the doctor of the patient's arrival and gets instructions from him.

The admission record that accompanied the patient to the unit will form the basis of his hospital record. The nurse admitting him adds a graphic sheet and a

nurses' record if they are not already attached. The patient's temperature, pulse and respiration rates and his blood pressure are taken and recorded on the graphic sheet. The time of admission, his general physical state, particular symptoms, laboratory tests taken, medication and treatment given are recorded on the nurses' record.

The record is kept in a safe place at the nursing unit desk. Only authorised staff may see and handle the record. It is hospital property. It does not belong to the patient and cannot be seen by the patient or any family member unless authorized to do so for some special purpose.

### **The Patient's Reaction to Illness**

People react differently to the diagnosis of a disease and the illness produced by it. The reaction is influenced by 1) the nature of the illness, 2) the nature of the patient, 3) the attitude of the patient toward illness and 4) by the attitudes of others toward the illness.

The length of the illness, its severity, whether it is disfiguring, disabling or life-threatening all influence the patient's reaction. A short, acute illness may be easier to cope with than a long, chronic illness.

The personality of the patient, his age, philosophy of life, his state of personal happiness, his financial position and the number of previous illnesses are all influencing factors. One patient will find an illness much easier to accept than another patient having the same illness.

The patient's attitudes about illness in general have a definite effect on his feelings about his own illness. Some people view an illness as an inconvenience in their normal activity; others view it as a major disrupt-



ing force in their daily life. Some consider illness a challenge to overcome; others as a fate to submit to.

A patient is much influenced by the reaction of other people to his illness. When others accept the problem with its limitations or changes in appearance, the patient is encouraged to place more importance on his inner attitudes. He puts more emphasis on overcoming his problems. If others consider the appearance of the patient to be repulsive or discouraging, the feeling is quickly recognized by the patient, who usually finds such attitudes very depressing. Family and friends, who have negative attitudes toward an illness, are harmful to the patient while those who have positive, encouraging attitudes are beneficial to him.

The behaviour patients show varies. Anxiety is common. There may be shock when a diagnosis is received. Sometimes the shock causes the patient to later be unable to remember what he was told. Sometimes there is denial of the truth, which does have value in preventing panic, terror and even suicide. The patient's desire to deny the truth should be respected, but he should be helped to accept the treatment he needs. There may be a questioning of, "Why me?" Some people experience regression with helplessness and dependency on others. The patient may feel rejected, lonely, become withdrawn and depressed.

Patients often have fears related to their illness. There are fears of pain, loss of body parts, diagnostic tests or treatments. There is fear of being neglected, left alone, and of being separated from the family. There are fears of loss of function, loss of self control, fear of death or of being a burden to others.

Explanations of what is being done for the patient, what is happening in his body or that is expected to happen relieve many of the patient's fears. The presence of family members and frequent, positive

encouragement all play a part in helping the patient overcome fears. A nurse listens carefully to what a patient says, and observes his actions to determine his fears, then takes appropriate steps to relieve the fears and encourage positive attitudes toward his illness.

### **Summary**

People are admitted to a hospital with varying degrees of reluctance. It is, therefore, important that they be received in a warm, friendly manner. They need to feel they are in a safe, caring place. Every patient has a reaction emotionally to his illness. There are many factors that influence the kind of reaction that occurs. Nurses, as well as family members and friends, have a role in helping the patient cope with being ill.

### **Additional Study Topics**

1. The effect of illness on behaviour.
2. The psychological effects of hospitalization.

### **Learning Activities**

1. Visit the admissions department to become familiar with its routines.
2. Select a particular patient. Learn about his social and family background.
  - a) Have social problems had an effect on his illness ?
  - b) Do any changes of living need to be made socially when he returns home ?
  - c) List members of the health team who are involved in his care.
3. List qualities in a nurse that will help the patient feel confident and at ease.
4. List the responsibilities of a nurse in admitting a patient to a unit of your hospital.



## **CHAPTER 3**

# **THE PATIENT AND THE HOSPITAL ENVIRONMENT**

### **CHAPTER CONTENTS**

#### **Environmental problems**

**Noise**

**Light**

**Air temperature**

**Humidity**

**Air pollution**

#### **The environment and injuries**

**Measures to prevent injuries**

**Patients needing special precautionary assistance**

#### **Controlling bacteriological problems**

**Hand washing**

**Care of excreta**

**Insect control**

### **LEARNING OBJECTIVES**

1. Environmental factors that influence physical health.
2. Nursing measures to help maintain a safe, comfortable hospital environment.
3. Methods of regulating temperature and humidity in a room.
4. Safety precautions to prevent injuries.
5. Handwashing technique for general nursing care.

# **THE PATIENT AND THE HOSPITAL ENVIRONMENT**

Citizens of a community look to a hospital as a safe haven for treatment and recovery from illness for themselves or family members. Thoughtful planning and constant effort by the staff are necessary to keep the hospital environment comfortable, pleasant and safe. It is essential to consider noise, light, air temperature and humidity in providing nursing care that supplies maximum benefit to the patient. Prevention of accidents, fire, infection and pollution are also essential in providing a safe environment.

## **MAINTAINING A THERAPEUTIC ENVIRONMENT**

### **Light**

The preferred source of light is the sun. Yet, it is necessary to prevent sun rays from falling directly on a patient or producing a glare by reflection from white-washed or painted surfaces. A glare is not only annoying, but irritating and harmful to the eyes. Curtains or shades at the windows are very helpful. Electric lights should not shine directly into a patient's eyes. Place night-lights to provide a measure of darkness for sleep, but enough light to be able to move about without danger of falling. Alternative means of lighting needs to be in readiness in case of electrical power failure.

### **Air Temperature**

The human body is very sensitive to the air temperature of our environment. We become accustomed to a certain temperature for greatest comfort. If the temperature is decreased, even slightly, we begin to feel cold. Likewise, we begin to feel discomfort at higher than accustomed temperatures. The workload of the cardiovascular and pulmonary systems is increased by either an increase or a decrease of air temperature, which in turn, affects the body temperature. This may delay a



patient's recovery or, in extreme conditions, be a threat to his life.

### **Humidity**

The amount of moisture in the air, called humidity, affects the evaporation of perspiration from the skin. Heat loss from the body is thus affected. When the humidity is high, there is little or no evaporation from the skin so that heat is not carried away from the body. There is danger of an increase of body temperature because of overheating. Dry air causes increased evaporation. The skin and mucous membranes become dry which produces nose, throat and bronchial irritation. The most comfortable range of humidity is from 30 to 60 percent.

### **Air Pollution**

Pollutants in the air include dust, smoke and gases. Dust is irritating to the nasal mucous membranes and the lungs. It is believed that microorganisms can be carried by dust and is the means of some infections spreading. Dust within the hospital can be controlled by dusting with a damp cloth and cleaning the floor with a wet mop. Bed linen is folded without shaking to prevent dust and lint in the air. Many kind of pollen are carried by dust and the wind which creates problems for persons with allergies or respiratory disease. Dust and pollen from outside are difficult to control except with an air conditioner which filters them from the air going into a room.

Tobacco smoke from cigarettes is dangerous to the smoker because he inhales the smoke which causes serious damage to his lungs. Recent studies have shown that there is almost equal damage to the lungs of a non-smoker who is in the presence of a person smoking cigarettes. In addition, the non-smoker may experience headache, nose and throat irritation or an allergic response. Hospitals are increasingly restricting or

banning tobacco smoking. Smoke from burning rubbish, factories and cooking fires also cause irritation to the eyes and the respiratory tract. All sources of smoke should be controlled in a hospital area. Death may result from inhalation of smoke in serious building fires. Gases have a number of useful purposes in a hospital. Gases used include anesthetics and oxygen. Some gases are poisonous; some will produce explosions or fire. Oxygen will burn and is explosive. Most gases are colorless and odorless which adds to their danger. The increased use of gas for cooking creates another source of possible danger when it is used in a hospital. Hospital personnel should understand thoroughly the types of gases used, the possible dangers and safety precautions to observe when using them.

Unpleasant odors are a form of air pollution. They are very annoying to a sick person. They may cause nausea and anorexia. An unpleasant odor is frequently caused by waste materials. Dispose all waste and refuse promptly in the proper manner and place. Empty, bedpans, urinals and emesis basins promptly and clean them well. Report toilets, sinks or drainage pipes that are not functioning properly. Remove leftover food from the patient's room and discard it in the assigned place as soon as the meal is finished.

The problem of controlling air temperature, humidity and purity are solved ideally by using an air conditioner. It filters the air as it comes in, cools it and removes excess moisture. In excessively dry air conditions, moisture is put into the air from a container of water kept in the air conditioner and refilled regularly. The air conditioner has controls that can be set to keep the room at the desired temperature and humidity. Air conditioners are in limited use so that other means of keeping the air comfortable must be used.

Electric fans are widely used to produce a comfortable atmosphere by causing air movement. Open doors and



windows, to take advantage of natural breezes, along with the fans keep many hospital rooms comfortable. In dry atmospheric conditions, the humidity can be increased by hanging wet cloth in the doorway, the window or on lines stretched in the room. In some areas heat must be provided in the patient's room for at least part of the year. Safety precautions are essential in providing this comfort.

## **Noise**

Sick persons are usually more sensitive to sounds than healthy persons. Restricted activity or physical pain may be the reason. Reasons for noise vary. Sometimes it comes from within the building; at other times it comes from within the building; at other times it comes from outside due to traffic, construction, industry or cultural practices. Sound is measured in decibels Sound above 120 decibels is painful and damaging to the ears. That amount of noise does not usually occur in a hospital, but lesser amounts of noise may affect blood pressure, digestion or other body functions. Complete silence is not desirable. Soft music is soothing while loud, piercing music is distressing and tiring. Sudden noises, because of the surprise or fear aroused, are to be avoided. Noise can be reduced by :

1. Handling equipment carefully to prevent dropping, bumping or rattling noises.
2. Answering the telephone promptly and speaking in a normal voice.
3. Going to people when you wish to speak to them rather than calling from a distance.
4. Avoiding laughter and social chatter in the nursing unit.
5. Reminding patients courteously to keep the volume of radio or television sets low.

## The Environment and Injuries

Accidents and injuries in a hospital are commonly from mechanical, chemical electrical or radiation causes. Most injuries are due to mechanical problems that lead to falls. Possibilities of a fall are increased in a hospital for several reasons. Patients are often weakened by their illness, taking new medications, having new treatments, sleeping in an unfamiliar bed, using unfamiliar equipment and in unfamiliar surroundings. Measures that will help prevent falls include :

1. Use siderails on beds.
2. Keep the floor free of clutter (paper, food, water, electric cords, etc.).
3. Use night lights.
4. Have brakes and safety straps on wheelchairs and stretchers and use them.
5. Use properly applied restraints when indicated.
6. Keep bathroom and toilet floors free of algae and other slippery substances.
7. Open and pass through doors and around corners cautiously.
8. Keep equipment in good repair.
9. Store all equipment and supplies in a safe place and not in patient's rooms or in passageways.

In addition to observing the above practical measures, the nursing staff needs to provide assistance to patients who are in special danger of falling. It includes those who have :

1. Been confined to bed for some time.
2. Taken medication that could cause hypotension, vertigo or mental confusion.



3. Had blood or other fluid loss.
4. Severe pain or weakness.
5. Had surgery.

Chemicals, electricity and radiation may all cause burn injuries. Chemicals used in cleaning and disinfecting are often harmful to the skin and eyes. Medications may produce dangerous reactions. Electricity can produce shock which in many cases results in death. All electrical equipment and outlets must be properly installed, maintained and handled. Radiation may come from x-ray machines, radium, ultraviolet lights or heat lamps used for giving heat treatments. All chemicals, electrical appliances and radiation sources must be handled with intelligence, and great care because of the dangers involved.

### **Bacteriological Problems**

The control of bacteria is a problem in every hospital. Many illnesses are due to some type of bacteria. Patients are more susceptible to infections because they are ill. Safety in this area is concerned with destroying disease producing bacteria and the dirt that harbors them to prevent cross-infection. Cross-infection means that a patient becomes infected with disease producing organisms from another patient by direct or indirect contact.

The most common method of carrying or spreading bacteria is by the hands. The organism that most frequently causes infections in a hospital is the staphylococcus which is normally found on the skin and mucous membranes. The most practical, effective means of controlling staphylococcal infections in a hospital is by frequent and thorough washing of the hands by doctors, nurses and other health team members. The hands should be washed before and after the care of each patient and sometimes during a procedure being done

for a patient. Handwashing does not kill, but simply removes the organisms. Wash the hands under running water. Lather them well with soap. Use friction by rubbing all parts of the hands and wrists including the surfaces between the fingers. Rinse the hands well, then repeat the process before thoroughly drying them. Many pathogenic organisms are present in excreta. Modern sewage disposal methods have been a tremendous help in controlling diseases that are spread through excreta. Handling and disposing of all fecal matter and the cleaning of all equipment contaminated by it must be done very carefully. The hands must be washed well after cleaning the equipment.

Insect control is an important part of controlling microorganisms. Cleanliness is essential in controlling insects. All areas of the hospital must be kept free of dust, dirt, and organic materials such as food waste. The wise use of soap, water, friction, air and sunshine are the most important and effective means of maintaining a degree of cleanliness that will control insects. Many different kinds of insecticides are available to use, but they must be used cautiously according to directions in order to avoid harm to any person.

Cupboards need to be cleaned regularly to help control insects. Only those supplies that are necessary are to be kept in cupboards. They should be kept clean, neat and orderly. Floors should be of a hard, smooth surface and wet-mopped daily or more often. There should be no dry sweeping. Walls should be whitewashed frequently or, if they have a washable finish, they should be washed regularly.

### Summary

Maintaining a safe, comfortable hospital environment requires constant efforts to keep noise, light, air temperature, humidity and air pollution controlled



They need to be controlled to prevent discomfort and harm to patients and personnel. Other problems for concern are the prevention of infections and the prevention of injuries from accidents. The first essential for control of the problems is to be aware of them. Awareness and the desire to provide the best possible care for patients will help a nurse see various ways of reducing and controlling the problems.

### **Additional Study Topics**

1. The effect of different types and amounts of noise on the body.
2. The effect of heat and humidity on the heart.
3. The principles, parts and operation of an air conditioner.
4. The role of disinfectants in a hospital.
5. The effects of tobacco on the body.

### **Learning Activities**

1. Study the placement of lights in the hospital rooms. List those that are suitable and those that are not with reasons.
2. Observe how good venilation is obtained in the hospital wards.
3. What gases are used in your hospital? What is the danger of each? Write out a list of safety precautions to be followed when using each gas.
4. List the safety measures you have seen practiced in your hospital.
5. List disinfectants used in your hospital. Do any of them have harmful effects? Write the safety precautions to follow in using each disinfectant.
6. Discover measures being used in your hospital to control insects.

## **CHAPTER 4**

### **DISCHARGE FROM THE HOSPITAL**

#### **CHAPTER CONTENTS**

**Preparation for a planned discharge**

**Helping the patient who is leaving against medical advice**

**Transfer of a patient to another hospital**

**Discharge of patient due to death**

#### **LEARNING OBJECTIVES**

- 1. Nursing responsibilities in discharging a patient.**
- 2. Responsibilities when a patient decides to leave against medical advice.**
- 3. Nursing activities involved in transferring a patient to another hospital.**
- 4. Discharge activities when death occurs.-**

## DISCHARGE FROM THE HOSPITAL

Patients leave a hospital because 1) their condition has improved so they no longer need hospital care, 2) they leave against medical advice, 3) they are transferred to another hospital or 4) their physical condition causes death.

### Planned Discharge

This is the most frequent and preferred way for patients to leave a hospital. The doctor decides the date of discharge. Sometimes the patient is told the anticipated date of discharge before admission. Often the patient's progress must be observed before the doctor can decide the date for discharge. When he feels the patient is ready to leave the hospital, he informs both the patient and the nursing staff. A discharge order is signed by the doctor and it becomes a part of the patient's permanent medical record. The nursing staff is responsible for the details of the discharge although many of the duties may be done by clerks or other personnel.

Instructions are a part of the process of discharging a patient from the hospital. In most cases instructions on many aspects of health care would have been given throughout his|her stay in the hospital. However, the nurse must make certain that the patient or family has a good understanding of all the essential elements of health care that are necessary for him. The patient or a family member must be given prescriptions or medications prescribed with clear instructions for their use. Diet restrictions or requirements should be carefully explained. The patient should be instructed about the activities he is permitted, future appointments with the doctor and further tests or treatments. The date and time of the patient's next appointment should be written



on a card or paper. All instructions should be written or printed. It is advisable to have simple diagrams to illustrate the instructions for those who cannot read.

The patient will need to settle his financial account with the business office personnel. Assistance in meeting the finance personnel is given as necessary. If valuables have been put in a safe, they are returned and a signed receipt for them attached to the patient's chart. Unused medications are returned to the pharmacy for credit to the patient. Assist the patient to dress and pack his belongings as necessary.

The patient or his family usually take care of arranging for transportation from the hospital, but may require help which should be given as possible. Some patients will be able to walk from the unit to the transporting vehicle. Others will have to be taken by a wheelchair. The nurse obtains the wheelchair, assists the patient into it, makes sure he has all his personal effects (belongings), medications and supplies. She accompanies the patient to the waiting vehicle and assists him into it. Return the wheelchair to its place.

The nurse removes all linen from the bed and arranges for the cleaning of the unit. Additional equipment used by the patient is cleaned and returned to its usual place. After the unit is cleaned and aired, it is made ready for the next patient.

The patient's medical record is completed including an assessment of his condition, instruction given to him, financial credit given to him, the transportation method by which he left and the time of departure. The chart is sometimes rearranged before it is sent to the medical records department for storage. The nurse removes the patient's name from the census record and cancels his diet.

### **Leaving Against Medical Advice**

There are many reasons why patients want to leave the hospital before their physical condition has sufficiently improved. It may be associated with family or business problems. It may be that the patient believes he is going to die and wishes to die at home. While we may believe the patient would benefit from more medical treatment and nursing care, we must respect his freedom to make the choice. If the patient does not inform the doctor of his intentions, the nurse must do it. The doctor will usually speak with the patient to discuss his need for continued care and the possible effect of his leaving without adequate treatment. Hospitals protect the institution and staff by having the patient sign a medical release form stating that he understands the possible consequences of his action and that he assumes all responsibility. The nurse obtains the signature of the patient and attaches the form to his medical record. Threats are never made to the patient because he is leaving. Treat him in a manner that will make him feel he is welcome to return for further care if he wishes. All the discharge procedures are carried out cheerfully and respectfully. Cleaning of the unit is arranged. The medical record and all other details are completed as for a planned discharge.

### **Transfer to Another Hospital**

A patient is transferred to another hospital because a doctor advises it for specialized treatment or the patient requests it. In either case, the doctor will prepare a medical summary of the patient's history, treatment and progress for the receiving hospital or doctor. The patient's hospital record is not transferred. Only instructions needed for care during the journey are given. If hospital equipment is required for the journey, arrangements are made for its return. The patient's family settles the financial account with the hospital and is usually responsible for obtaining a vehicle to transport the patient.



The nurse will prepare the patient for the journey making certain he has all his belongings and valuables. She assists in taking the patient to the transporting vehicle and makes him as comfortable as possible for travelling. The patient's medical record is completed and sent to the medical records department. All other details of a discharged patient are completed.

### **Discharge due to Death**

The release of some patients from the hospital is brought about by their death. The nurse may need to assist the family in making the financial settlement and for transportation of the body. She helps them collect the patient's belongings and valuables. The patient's body is washed and dressed before it is sent to the hospital mortuary or taken by the family. Make sure that permission of the family is obtained before attending to the dead body. This is because the customs will vary in accordance with the religion and beliefs. The nurse accompanies as the body is taken by stretcher to the mortuary or a waiting vehicle. She assists the family as necessary in their departure.

The bed linen is removed and cleaning of the unit arranged. All records and forms relating to the death and its report are carefully completed and sent to the designated person.

In certain circumstances an autopsy of the body is desired or legally required. The nurse should be aware before death occurs that the procedure is to be done and where the body is to be sent. The nurse has no responsibility for the autopsy, but may be asked to assist the doctor in getting the required signatures for permission. The body is washed before sending.

### **Summary**

The discharge of a patient from the hospital is an important step in his total recovery. He needs careful



instruction in all aspects of his health to have continued progress in his home. The patient and the family are shown thoughtfulness and courtesy in leaving the hospital.

### **Learning Activities**

1. Discuss the responsibilities of the nursing staff in the discharge of patient.
2. List the responsibilities of the patient or family in his discharge. In what ways will assistance be needed ?
3. Question senior nurses to discover as many reasons as you can that people have given for wanting to leave the hospital against medical advice.

## **UNIT III**

### **BASIC NURSING ACTIVITIES**

## INTRODUCTION TO UNIT

All patients have physiological needs that must be met whether they are at home or in the hospital. Personal hygiene, nutrition and comfort are included in the list. Meeting basic needs satisfactorily has therapeutic value as well. Nursing procedures are well planned ways of doing the many essential tasks required in meeting the needs of patients. Basic nursing procedures are repeated so often that there is danger that their importance and value are forgotten in the haste of caring for many patients. Every nursing activity is important to the patient and it is, therefore, worth doing well. Many nursing procedures will be discussed in the following pages.

There are certain general steps that are necessary at the beginning and at the end of every procedure. They are outlined below and will not be repeated in the discussion of each procedure in the rest of the text.

**At the beginning of every procedure :**

1. **Inform the patient that the procedure is to be done. If he is unfamiliar with it, give a clear explanation in terms he will understand and answer his questions.**
2. **Collect all equipment. Make it ready for use and arrange it conveniently on a tray.**
3. **Wash hands to remove dirt and microorganisms as a protection to the patient, other patients and yourself.**
4. **Take the tray to the patient's bedside. Positively identify the patient by asking his name or by checking his identification tag. Special care must be used when there are two or more patients having the same name.**
5. **Provide privacy for the patient by closing the door of a private room. Draw curtains around a bed in general ward or arrange screens to protect the patient from view.**



6. Drape the patient if required to avoid unnecessary exposure of the body. A sheet or other clean cloth may be used.

**At the end of every procedure :**

1. Make the patient comfortable. Place drinking water, or other items the patient may want, conveniently on the top of the bedside locker.
2. Take all equipment and articles for disposal to the service area. Discard items for disposal in the proper container. Clean equipment and return to its place of storage. Put used linens in the soiled linen container.
3. Wash hands thoroughly.
4. Record the procedure on the patient's chart. Include the time, indications for the procedure, the patient's reaction to it, problems encountered and other nursing observations.
5. Report verbally to the charge nurse that the procedure has been completed. Give an account of any significant occurrence.

## **CHAPTER 5**

### **CARE OF THE PATIENT'S UNIT**

#### **CHAPTER CONTENTS**

**Care and cleaning of a patient's unit**

**Personnel for cleaning**

**Methods of cleaning**

**Hospital furnishings**

**Beds**

**Bedside lockers**

**Mattresses**

**Pillows**

**Linen**

**Care of linen**

**Care of rubber and plastic sheets**

**Bedmaking**

**An unoccupied bed**

**An occupied bed**

**A post-operative bed**

#### **LEARNING OBJECTIVES**

1. Types of furniture in a patient's room and its care.
2. Care of mattresses and pillows.
3. Care of linen.
4. Care of rubber and plastic sheets.
5. Make an occupied bed, an unoccupied bed and a post-operative bed.

## CARE OF THE PATIENT'S UNIT

A patient's unit may be a private room or it may be part of a ward containing many units. Curtains or some other means separate units in a ward to provide a degree of privacy while giving nursing care. Minimum furnishings for each unit are a bed, a bedside locker and a stool or chair. Additional items are added according to need, availability or the cultural patterns of the area. It is desirable to have a sink and running water in each private room and ward. Good drinking water should be easily available to the patients.

### Care and cleaning

Housekeeping staff do much of the work of keeping patient's unit clean. However, the nurse must know safe, hygienic cleaning methods. Her encouragement and help to the cleaning staff will stimulate better performance from them. Thorough cleaning of the unit is done in between patient occupancy and regularly during the stay of patients with long term illness. Furniture is washed with a wet cloth and soap is used when necessary to remove dirt. The nurse has the responsibility for the cleanliness and tidiness of the unit. It includes instructing the patient and his relatives in routines of cleanliness. The nurse must be prepared to do cleaning whenever necessary. A rubbish container must be easily accessible to the patients as well as to staff to aid in maintaining clean, orderly nursing units.

Methods of cleaning vary according to the materials used in construction of the hospital and the type of equipment available to use in cleaning. It is important that no cleaning method be used that causes dust in the air. It is believed that staphylococci and other microorganisms are spread by dust as well as through direct contact. Staphylococci are a problem in hospitals. They are responsible for causing respira-



tory, wound and other infections. Staphylococcal infections are frequently fatal to newborn babies. A wet cloth should be used for dusting and a wet mop for cleaning the floor unless mechanical equipment that does not cause dust is available.

## **Hospital Furnishings :**

### **Beds**

They are made of metal or hard wood. The finish on the metal or wood varies. It should be durable and washable. The height of hospital beds vary. They should be of a convenient height to prevent strain to the back of a nurse when a patient requires much nursing care. The bed of an ambulatory or self-care patient is better if it is lower and convenient for the patient to get on and off. Some beds are made in such a way that the height can be adjusted easily. They are very useful and helpful. Siderails should be available to attach to the bed of a patient who needs them.

A bed frame may have metal springs, a solid or perforated sheet of metal, woven cane or cotton tape webbing for the bottom of the bed. Some hospital beds are made with a mechanism for elevating the head or the foot of the bed for comfort or for treatment of the patient. Special beds are available for particular purposes such as for orthopaedic problems. Wheels under the legs of a bed make it easy to move. Wheels must be checked regularly to remove hair and other materials that interfere with their free rolling. Regular oiling is necessary for the best working of the wheels.

### **Bedside locker**

A locker is made of wood or metal. A number of different styles are used. Some have a door on the front and a shelf on the inside. Some have a drawer above the shelf. Others have heavy mesh wire at the

back to allow air to circulate in the cupboard while keeping insects out. The patient keeps personal articles in the locker. Fresh water and a drinking cup are placed at a convenient place on the top to enable the patient to take water as he desires. The locker is checked and cleaned daily. The inside and top should not be cluttered with unnecessary articles. Food is not to be stored in the locker because it attracts insects and small animals.

### **Mattress**

A mattress is for giving support and physical comfort to the body. It should be firm to make good body alignment possible. A mattress may be filled with cotton, coir, foam rubber or a combination of materials. It should be covered with durable cloth that can be put in the sunlight or in an autoclave. Foam rubber, water or air filled mattresses are especially useful for patients who are predisposed to or having bedsores. They adjust to the patient's body so that equal pressure is placed upon the entire body surface that touches the mattress.

### **Pillows**

They may be of cotton, coir, foam rubber or polyester fiber. Silk cotton pillows remain soft for a long time and are very comfortable. As well as being used under the head, pillows are used to give support to the body in various positions. Plastic covered pillows should be used when there is a possibility of drainage soiling them. Both mattresses and pillows are to be aired in the sunlight between patients using them. Some hospitals have large autoclaves in which they are sterilized.

### **Linen**

The basic items of linen required for a hospital bed are a mattress cover, two sheets and a pillow case. A

plastic or rubber drawsheet and a cotton drawsheet may be required. In some areas blankets or an additional bed cover are necessary. Durable cotton is best to use for the linen as it must withstand strong pulling and frequent laundering. A towel and washcloth be kept in the unit.

There are different ways of handling soiled hospital linen. Some hospitals have large machines for washing, drying and ironing the linen. Other hospitals must depend upon handwashing all linen or sending it to local dhobies. In some hospitals the clean linen goes directly from the laundry facilities to a central linen service from where it is dispensed, as requisitioned, to the wards. In other hospitals the linen is returned directly from the laundry to the ward or department from which it came. In any system, constant alertness is needed to prevent loss or damage to the linen.

Linen is an expensive item in the hospital budget. The frequent laundering is costly. Its care is important for that reason, but more significant is the improved quality of care to the patients when there is an adequate supply of clean linen. It is necessary for the hygienic protection and the comfort of patients. The nurse, as a vital member of the hospital team, is in a position to greatly influence the control and care of the linen through her attitudes and actions.

Rules to follow in caring for linen to prevent damage and loss should include :

1. A separate linen cupboard with the different items separately stacked and labelled and each item kept in its proper place.
2. Use items only for the purpose intended.
3. Never use torn linen, but send it for mending or replacement.



4. Take a linen inventory regularly, reporting losses and getting it replaced promptly.
5. Badly soiled, stained, damp or contaminated linen be handled according to the hospital routine.
6. When treatment of a patient requires the use of a medication that will cause stains, old or already stained linen should be used.

### Care of Rubber and Plastic Draw Sheets

Rubber or plastic draw sheets are used for protecting the bottom sheet and mattress of an incontinent patient or one who has some type of body discharge that could soil the bed. The rubber or plastic should be about a meter long for an adult bed and wide enough to go across and cover the sides of the mattress. A strip of strong, durable cloth 30 to 40 cm wide (12 to 16 inches) is sewed on each side for tucking under the mattress to hold it in place. The following routine of care applies to both rubber and plastic draw sheets.

1. Wash with soap and water.
2. Rinse with water.
3. Dry with a clean cloth or hang on a bar (rod) to dry.
4. When fully dry, dust with powder, roll carefully without wrinkles and store in assigned place.

If the plastic or rubber draw sheet is used in a contaminated area, soak it in a suitable disinfectant according to directions. Avoid contact with oils, chemicals and heat (including sunlight), all of which will cause the rubber or plastic to become dry and crack. Never fold rubber or plastic or cracking will occur at the folds.

## **Bedmaking**

Beds are made daily, usually in the morning at the time of the patient's bath. The linen may need to be tightened and straightened a number of times during the day. Linen that becomes wet or soiled should be changed immediately. The linen should be smooth and free of wrinkles to prevent pressure on the skin. Wet linen and pressure on the skin help to produce decubitus ulcers (bed sores).

When removing linen from a bed (stripping the bed), it is folded without shaking it in order to prevent the spread of dust and micro-organisms. The linen is not allowed to touch the nurse's uniform nor is it placed on the floor, but in a suitable container.

## **Unoccupied bed**

When an unoccupied bed is to be made, the fresh linen is put in a convenient place near the bedside. It is stacked in order with the item to be put on the bed first, placed on the top. Linen usually used, named from the top of the stack downward is 1) a mattress cover, 2) bottom sheet, 3) rubber or plastic draw sheet, 4) cotton draw sheet, 5) top sheet and 6) pillow case.

After carefully stripping the bed and placing all the soiled linen in the designated container, the bed frame is thoroughly cleaned. In many cases this will have been done by an aide. The mattress is turned. The mattress cover is rolled open evenly back to its closed end. With the hands at each corner of the closed end of the cover, slip it over the top end of the mattress, fitting the corners smoothly. Unroll the cover the entire mattress, straighten it and close the bottom end by the method provided on the cover.

The bed is made on one side, then it is completed on the other side. Place the bottom sheet with the center fold down the center of the bed. If the sheet is long enough, the end is put over the bottom end of the mattress, tucked under it and the corner mitered. If the sheet is not long enough for that, the bottom end of the sheet is brought even with the foot end of the mattress. The sheet is smoothed upward over the mattress, tucking the top of the sheet firmly under the head end of the mattress. There should be at least 30 cm (12 inches) tucked under to hold it in place. The top corner of the sheet is mitered and the side firmly and smoothly tucked under the mattress.

To miter the corner of a sheet, it is first tucked firmly under the end of the mattress. With one hand, take hold of the side of the sheet a short distance from the end of the bed. Hold it so the edge hangs straight down. Lay the upper part, of the portion being held, onto the bed. The part of the sheet hanging below the level of the mattress is smoothed under it. With one hand lift the portion of the sheet from the bed. Place the other hand against the sheet at the edge of the mattress. Bring the other part down so it forms a diagonal line on the side of the mattress. The entire side of the sheet is smoothed under the mattress if it is the bottom sheet. A top sheet, blanket or bed cover is left hanging loose at the sides after mitering the corner.

The rubber sheet is placed on top of the bottom sheet with the upper edge about 40 cm (16 inches) from the top of the mattress. The cotton draw sheet should be a little wider than the rubber sheet so that none of the rubber comes in contact with the patient's skin. Both the rubber sheet and the draw sheet are tucked firmly under the mattress and smoothed toward the other side of the bed.



Place the top sheet with the centerfold down the center of the bed and the top end even with the top of the mattress. The sheet is placed with the widest hem at the top and the wrong side up. The right side of the hem will show when it is folded back. The sheet is smoothed toward the foot of the bed, the end tucked under the mattress and the corner mitered. The side of the top sheet is allowed to hang loose at the side of the bed. If an extra bed cover is used, it is placed on the top sheet, the bottom end tucked under the mattress and the corner mitered the same as the top sheet.

The nurse then goes to the other side of the bed. Beginning with the bottom sheet, each sheet is pulled to remove wrinkles. Corners are mitered and each sheet tucked under the mattress as on the first side. If the bed is not to be used for some time, the top sheet is left smoothed up over the bed (a closed bed). If the bed is being used by a patient, the top sheet is folded back about 15 to 25 cm (6 to 10 inches) and then fanfolded to the foot of the bed (an open bed). This will make it easy for the patient to get into the bed.

Put the pillow case on the pillow using the same technique as in putting on the mattress cover. Roll the the pillow case from the open end to the closed end. Grasp the closed end with one hand and through it pick up one end of the pillow with the same hand. Unroll the pillow case smoothly over the pillow with the other hand. Place the pillow at the head of the bed with the open end of the pillow case away from the room or ward entrance. Arrange the bed in its correct position. Put all items in their proper place and leave the unit area tidy. Remove soiled linen to its place.

A rubber sheet and draw sheet are not necessary for all patients. They may be omitted at the discretion of the nursing staff. However, they are always used if there is any question of their necessity. Mattresses must be adequately protected.

## Occupied bed

The required linen is kept in a convenient place beside the bed as for making an unoccupied bed. It is stacked in the order in which it will be put on the bed. Remove extra pillows, leaving the patient with only one under the head. An adjustable bed should be in the flat position unless contraindicated by the patient's condition. Assist the patient to the opposite side of the bed. Gently loosen the linen on the near side of the bed. Pull the mattress to the head of the bed. Fanfold the draw sheet, the rubber sheet and the bottom sheet toward the patient. Pull the mattress cover smooth if it is not soiled. (Change if soiled.) Place the bottom sheet on the bed and tuck it under the mattress as for an unoccupied bed. The remaining half of the sheet is fanfolded toward the patient. Bring the rubber sheet into place over the clean bottom sheet. Pull it smooth and tuck the edge under the mattress. Put the clean draw sheet over the rubber sheet. Tuck the appropriate amount under the mattress and fanfold the remaining toward the patient.

Lift the top sheet slightly and assist the patient to turn onto the clean linen. The nurse must be sure to stand on the side of the bed toward which the patient is turning in order to keep him from falling out of bed. When the patient is securely and comfortably in place, go to the opposite side of the bed. Loosen the soiled bottom sheet and draw sheet. Remove them, fold and place them in the soiled linen container. Pull the clean sheets smooth and finish making the foundation of the bed. Place the clean top sheet over the soiled one. Pull the soiled sheet from under the clean one, fold it and put it with the other soiled linen. Tuck the clean top sheet under the foot of the mattress leaving room for the feet to be comfortable. Miter the corners. Replace the soiled pillow cover with a clean one. Place the pillow under the patient's head so it is comfortable. Adjustments

in the procedure may be needed because of the patient's condition or equipment being used. In some conditions it may be better to make the bed from the top downward. Leave the patient comfortable.

Most occupied beds are made at the time of the morning bath. It is an opportune time to make the unit orderly and neat in appearance. Unnecessary articles are removed from the bedside cupboard and unit. Needed articles are cleaned and neatly arranged. Furniture is dusted with a wet cloth. It is washed if necessary.

### **Post-operative bed**

This is also referred to as a **surgical bed**, a **recovery bed** or an **anesthetic bed**. It is made with the top linen folded so a patient can be easily moved from the stretcher to the bed and covered quickly with the sheet. The bed can be made in the same manner for a patient who has limited movement and can get into a bed easily when it is made in this way.

The mattress cover, bottom sheet, rubber sheet, and draw sheet are put on in the same way as on an unoccupied bed. The top sheet is folded back at the top about 25 cm (10 inches). It is folded back about the same length at the foot of the bed. The sheet is then fanfolded lengthwise to the far side of the bed, making the folds 15 to 20 cm (6 to 8 inches) wide.

A rubber sheet and towel are placed at the top of the sheet above the level of the draw sheet. The pillow is placed upright against the head of the bed. All articles and equipment for the care of the expected patient are obtained and arranged for convenient use.

### **Summary**

Cleanliness of the patient's unit is desired for the pleasing appearance of a clean, neat area, but more



**importantly to protect patients and hospital staff from infections.** Cleaning methods are aimed at the control of micro-organisms as well as keeping the dust and dirt controlled. Techniques of cleaning are intended to be the easiest possible for the staff and for their safety.

**Hospital furniture is designed to be comfortable for the patient and convenient for the staff.** Durable, washable linen is kept in good repair. It is protected from loss and mishandling.

**Bed making is an important activity.** A well made bed adds to the physical comfort and safety of the patient. It stays firm and well made for a longer time than a carelessly made bed.

### **Additional Study Topics**

1. Staphylococcal infections in the hospital.
2. Techniques of cleaning to be used in a hospital.

### **Learning Activities**

1. Clean a patient unit.
2. Visit the laundry to observe laundering and care of linen.
3. Practice making an empty bed.
4. Practice making a bed with a classmate as a patient.
5. Practice fanfolding a top sheet for a post-operative bed.

## **CHAPTER 6**

### **THE PATIENT'S PERSONAL HYGIENE**

#### **CHAPTER CONTENTS**

**Early morning care**

**Morning care**

**Bed bath**

**Partial bath**

**Bathroom bath**

**Evening care**

**Bedtime care**

**Back rub technique**

**Care of pressure areas**

**Care of the hair**

**Daily grooming**

**Hair shampoo**

**Pediculosis treatment**

**Care of the nails**

**Care of the mouth**

#### **LEARNING OBJECTIVES**

1. Refreshing patients in preparation for breakfast.
2. Giving complete personal hygiene during morning care.
3. Giving a partial bath.
4. Assisting with a bathroom bath.
5. Method of giving a relaxing back rub.
6. Nursing activities to prevent decubitus ulcers.
7. Care of the hair including shampoos and pediculosis treatment.
8. Caring for the finger and the nails.
9. Preventing mouth and dental problems in patients.

## THE PATIENT'S PERSONAL HYGIENE

Personal hygiene has a significant role in every society. Every culture develops and maintains its standards and methods of maintaining personal cleanliness. Habits are formed for performing actions to keep the body clean and functioning normally. It is usually necessary to make adjustments of hygienic habits when a person becomes a patient in a hospital. Each person will need assistance in adjusting his personal hygiene practices to the hospital situation. Patients, who are able to move about freely, may have very little to change in their daily routine. Others, who are restricted in their activity, will face problems and will need help and encouragement in continuing good personal hygiene.

Good personal hygiene causes the patient to feel clean and refreshed. He can then be at ease and able to enjoy visitors and hospital staff coming to his room. Cleanliness helps decrease the spread of infection. This is of special importance in a hospital because there are many patients with a decreased resistance to infection.

### Early Morning Care

The daily hygiene routine begins with early morning care upon awakening. Bed patients are offered a bedpan or urinal, the hands and face washed, oral hygiene attended and the hair combed. The bed linen is straightened and the patient is made comfortable. Fresh drinking water is provided. Ambulatory patients go to the toilet and bathroom to refresh themselves.

### Morning Care

Morning care is given after breakfast. For bed patients, it consists of using a bedpan or urinal, a bath, a back rub, oral hygiene, care of the hair and nails, change of bed linen and the patient's clothing, leaving the

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patient comfortable and the unit clean and neat. Ambulatory patients may be able to care for all their hygiene, but are given assistance if needed. The bed is changed and made for them.

The skin is a protective covering for the muscles and internal organs. It contains the sensory nerve endings for touch, temperature and pain. In its function to produce sweat to carry away waste, it also helps to regulate body temperature. The skin produces sebum, an oily substance, to help keep itself soft. It aids in the production of vitamin D. During illness, the skin needs good care to keep it performing its functions well. The skin is observed for abnormalities during the bath.

A bath provides exercise for a person whose activity is limited and stimulates circulation as well as cleansing the skin. Ambulatory patients are often permitted to take a bathroom bath. Most people prefer this method and like to select the time of day they will have the bath. Some patients, who must have a bed bath, are able to do all or part of the bath with the nurse washing the areas the patient cannot reach. The time of giving a complete or partial bed bath can sometimes be adjusted. However it is usually preferred in the early morning so the patient is fresh for visitors and the activities of the day.

### **A bed bath**

Articles required for giving a bed bath are a basin for water, soap, a towel and a wash cloth. Other articles are needed for the other activities of the morning care routine. They include mouth care articles, oil, lotion or powder for a back rub, comb and nail clippers or scissors. Put all the articles on a tray.

Partly fill the basin with warm water of about 43° to 46°C (110° to 115°F) temperature. The warm water helps

relax muscles and remove oily wastes from the skin. It is more comfortable to the patient than cold water. Some hospitals supply a special bacteriostatic soap for bathing patients. Sometimes the soap is supplied by the patient.

Bring the tray of articles and clean linen for changing the bed linen to the bedside before starting. Use curtains or screens to provide privacy. Offer the bedpan or urinal before starting the bath. Oral hygiene may be done before or after the bath according to the patient's wishes. Remove the patient's clothing and cover the patient with the top sheet. Place the towel under the part to be washed so that the top sheet does not get wet.

For washing the patient, wrap the washcloth around the hand and tuck the end in at the palm forming a soft pad in the hand for washing. This prevents the wet ends of the cloth from dragging over the patient's skin. Wash the eyelids, face and neck first, then the arms, hands, chest, abdomen, legs, feet, back and genital area. This order may need to be adjusted because of a special problem or a preference of the patient. Change the water whenever necessary.

Many patients prefer to wash their own face and they should be encouraged to do it. Some do not wish to have soap used on their face and that preference should be respected. If the nurse must wash the face, wash the eyelids first without soap. The rest of the face, ears and neck are then washed using soap, if the patient agrees, and the skin rinsed well. Wipe the skin dry with the towel. Place the towel beneath each arm as it is washed and rinsed, then dry it with the towel.

If the patient is able, he may wash his hands in the basin. The more seriously ill or unconscious patient may need to have each hand washed separately in the

basin or with the washcloth. Wash the areas between the fingers carefully and dry. Clean and trim the nails as needed. The towel is used to cover the chest while the abdomen is washed. The top sheet is then put over the abdomen and chest. Uncover and wash the legs, one at a time, with the towel on the bed under the leg during the washing and rinsing. Place the feet, one at a time, in the basin for washing. Clean and trim the toenails if needed.

Obtain clean, warm water to wash the patient's back. Help the patient turn to one side. After washing, rinsing and drying the back a back rub is given. Most patients prefer to wash their own genital area to complete the bath. The nurse does it if the patient cannot. If it is not washed well, unpleasant odors, discomfort, skin irritation and infection may develop. The area is kept covered during the washing and drying. The nurse inspects the area if she has any question about its condition.

Following the bath, oral hygiene is performed if it was not done before the bath. The hair is brushed and combed. Place a towel under the head of a person who must remain lying down. Gently brush and remove all tangles. The hair of a woman with long hair is managed best if it is put into two neat braids. Persons, who can take care of their own hair, are encouraged to do so for the psychological benefit of a measure of independence and for the exercise value.

Change the bed linen as necessary and make the bed. Put a fresh gown or clothing on the patient. Leave the patient comfortable to rest or sleep. The entire unit is left neat and orderly with the items the patient needs placed within easy reach.

### **A partial bath**

A complete bath does not always need to be given daily. A patient, who perspires freely, is very appreci-



ative of a complete bath daily and, sometimes, even more frequently. Elderly people tend to have dry skin. Bathing increases the dryness. Dry skin develops small cracks which are uncomfortable and may lead to infections or decubitus ulcers. If patients have a problem of dry skin, it is wise to omit the full bath on some days. An oil bath may be given to help keep the skin soft and supple. Sometimes a complete bath is withheld because it is more important for the patient to rest. However, the patient still needs to be refreshed by a partial bath — the washing of the face, ears, neck, hands, axilla, back and genital area. A back rub, mouth care and hair care are given.

### **Bathroom bath**

Patients, whose physical condition permits, are encouraged to take a bath in the bathroom. It is the normal way and provides more activity for the patient than a bed bath. The nurse makes the bathroom ready. She makes certain that water of the right temperature is ready and that soap, a towel and clean clothing are conveniently placed. It is advisable to have a stool on which the person may sit while bathing if he feels the necessity of it. Check on the patient by calling to him during the bath. A female nurse may need to go into the bathroom to assist a female patient. A male nurse or attendant should be available to go in to help a male patient. The nurse should see that the bathroom is cleaned and put in order as soon as the patient finishes bathing.

### **Evening Care**

This is usually done before the evening meal and evening visitors arrive. A bedpan or urinal is offered. The patient's face, hands and back are washed. A backrub is given along with care to all the pressure areas. Oral hygiene is given. Crumbs are brushed from the bed. Soiled linen or clothing is changed. The

linen is straightened, the patient made comfortable and the unit tidy. Fresh drinking water is provided.

### **Bedtime Care**

At the time of giving bed time medications, bed patients are offered a bedpan or urinal. Back care is given to those who need it. The patient is made comfortable. All unnecessary lights are turned off.

### **Back Rub**

A back rub is given to stimulate circulation and nutrition to the skin and produce relaxation of the muscles. The patient may lie in either the prone or lateral position. Alcohol, skin lotion, oil or powder is applied to the skin of the back to allow the nurse's hands to glide freely over the area. Alcohol tends to dry and toughen the skin. Skin lotion and oil soften the skin. Some patients like to provide their own lotion or oil. Some prefer that only powder be used.

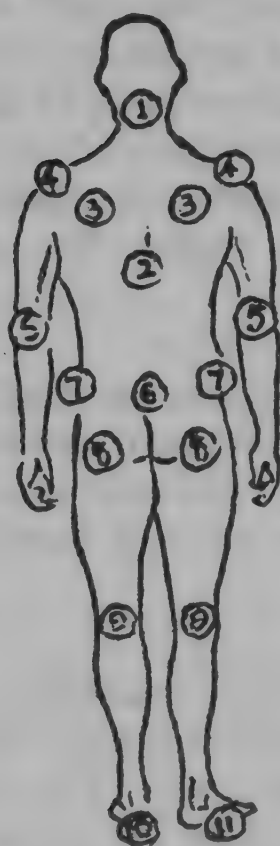
The back rub should be gentle and soothing for an elderly person or a seriously ill person, yet firm enough to provide stimulation to the tissues and relaxation to the muscles. Firm, vigorous rubbing movements are used for the younger, less debilitated patient.

The nurse, using both hands, rubs from the buttocks upward on each side of the spine in a long movement, then in a circular movement from the neck out over the shoulders and back over the scapula. With a lighter touch, the hands glide down to the buttocks again. This series of movements is repeated several times. Kneading movements along the spine and over the bony prominences is done beginning at the coccyx and proceeding upward to the scapula and shoulders. Excess lotion or oil (if used) is wiped away at the completion of the back rub. Powder may be applied to the back after the rub. It helps keep the skin dry and prevents irritation and friction where there are folds of skin.

However, care must be taken to rub the powder evenly on the skin so it does not cake in the skin folds.

### Care of Pressure Areas

A pressure area is an area of the body where a prominence of bone is close to the surface. There is often very little subcutaneous tissue between the bone and the skin. These areas include the buttocks, lateral area of the hips, heels, ankles, spine, shoulders, elbows and the back of the head. Continued pressure at any of these sites causes the skin to become red and irritated. It is the first sign of a problem. The outer layers of tissue are destroyed and the deeper tissues affected quickly if the pressure is not relieved. An ulcer which forms in this way is called a **decubitus ulcer**, a **pressure sore** or a **bed sore**.



1. Occiput
2. Spinous processes
3. Scapula
4. Shoulder
5. Elbow
6. Sacrum
7. Ischial crest
8. Ischial tuberosity
9. Knee
10. Heel
11. Side of foot

Fig. 1 — Possible Pressure Points in Human body

The immediate cause of a decubitus ulcer is interference with blood circulation which reduces nutrition



to the skin and underlying tissues. There are usually a number of other factors involved in the development of a decubitus ulcer. A generally poor nutritional state affects skin health. Wrinkled skin in elderly people or caused by weight loss is easily damaged. The particular illness of the patient may affect circulation, cell activity, produce fever, cause incontinence or excessive perspiration, all of which increase the danger of decubiti developing in areas of pressure. The use of rubber or plastic sheets, while often necessary, do predispose to the formation of decubitus ulcers.

A decubitus ulcer is very difficult to heal. Prevention requires intensive nursing care and attention, but it is much less a problem than trying to heal an ulcer. Pressure to any particular area should be relieved. There are three types of mattresses that are useful — a foam rubber mattress, an air mattress and a water mattress. Their value is due to a principle of physics that causes them to produce equal pressure to all areas of the body that touches the mattress. If no special mattress is available, a pad of synthetic lamb's wool or of foam rubber may be used under the patient's pressure areas.

An air ring cushion under the buttocks or small gauze covered cotton rings under other pressure areas, which have often been used in the past, are not now recommended. They are considered to be too hard and to interfere with circulation.

A special mattress or pad, when available, is not sufficient by itself to prevent decubitus ulcers, but other nursing measures must be used as well. The patient's bed must be kept clean, dry and free of wrinkles. If a patient is incontinent of urine, the linen must be changed immediately after urine is passed. Sometimes a catheter is inserted into the bladder and connected to a drainage bottle in order to keep the bed dry.

Careful washing and cleaning of the skin is done immediately after each defecation.

Perhaps the most important nursing activities in preventing decubiti are frequent change of position, keeping the patient in good alignment, and washing and massage of the pressure areas in order to relieve pressure and stimulate circulation. It is advisable to change the position and give special care to the pressure areas every two hours for those who are especially prone to decubiti. A good diet is necessary to the good health of all body tissues. Various skin lotions and medications have been tried to pressure areas, but none have been found that are fully effective in preventing or treating decubiti. In extreme cases, surgical debridement will be necessary to bring about healing of an ulcer.

### Care of the Hair

Care of the hair is part of the personal hygiene care of each patient. It is another way of helping the patient feel good about himself and maintain a good mental attitude. The hair should be thoroughly combed and brushed daily. Male patients with short hair need little attention. Those with longer hair need more attention to keep it from becoming tangled or matted. Some men or their family may agree to having a barber cut it short, especially if an extended period of illness in bed is expected. However, it can be cut only with the consent of the patient or family.

A woman usually needs more attention to the hair due to its length and because of its importance to a woman's appearance. Unless it is combed daily, it becomes very tangled quickly. The hair looks neat and stays in better condition after combing if it is braided. Two braids is more comfortable to the patient than having it in only one braid. All loose hair should be gathered after combing and discarded in the proper waste container.

## **Hair shampoo**

The hair should be washed once a week or more often to keep it in good condition. Patients, who take a bathroom bath, often wash their hair at the time of bathing. Long term bed patients need a hair shampoo in bed.

Articles needed for giving a shampoo to a bed patient are a comb, brush, shampoo, towels, rubber or plastic sheet, an empty bucket, a bucket of warm water and a jug. The articles are taken to the bedside. The patient is moved in the bed so his head and shoulders are at the edge. The rubber sheet is rolled at one end, placed under the patient's head and curved in such a manner that water, from washing the hair, will go only on the rubber sheet and be carried by its free end into the empty bucket placed at the side of the bed.

The hair is brushed and combed to free it of tangles before starting the shampoo. Wet the hair slightly with the warm water. Apply the shampoo in small amounts, rubbing it well with the finger tips. Rinse the hair well with the warm water. Apply shampoo the second time. Rub it all over the head and hair forming good lather with the finger tips. Rinse the head and hair thoroughly with the warm water to get all the soap out. Obtain a second bucket of water if necessary.

Dry the hair as much as possible with a towel. Remove the rubber sheet. Move the patient into a comfortable position. Place a dry towel under the head and spread the hair in fan fashion on it to finish drying. Remove all equipment. Later, when the hair has fully dried, brush and comb it and arrange it in the desired manner.



## **Treatment of pediculosis**

The presence of lice on the body is called pediculosis. While they may be found on the hair on any part of the body, the most common type of louse is the head louse which is found on the hair of the head. They cause severe itching, are very annoying and can lead to infection of the scalp. Pediculi are spread by direct contact or indirectly through infested clothing, bed linen or combs. Anyone can get them, but the continued presence of pediculi is usually due to poor hygiene habits. Lice reproduce by laying eggs, called nits, which are firmly attached to individual hairs. Different preparations are available for effectively treating pediculosis. Some medications will destroy the nits as well as the lice with only one application. Medications that do not kill the nits need to be reapplied, usually a week later. Treatment must be given according to the directions for the particular medication used. After the treatment,, the hair is combed well with a fine toothed comb. Further washing and treatment is done according to direction for the medication used.

## **Care of the Nails**

Nail care is a part of personal hygiene. Many patients take care of keeping their nails trimmed and clean. Most patients who need a bed bath also must have their nail care done for them. Dirty nails are a danger because of possible damage to the skin by scratching and subsequent infection. The fingernails should be checked for cleanliness and length every time the hands are washed. Keep them trimmed to a suitable length. Cut them carefully to prevent injury to the cuticle or skin.

The toenails, especially of long term patients, need attention. They are thicker and more difficult to cut than the fingernails. They are easier to cut after soaking them in warm water for 10 to 15 minutes.

They should be cut straight across to prevent the sides of the nails from growing into the flesh of the toes. The surrounding tissues must not be injured.

### Care of the Mouth

Part of the purpose of the mouth is to receive food and begin preparing it for further changes in the digestive process. It contains the teeth and tongue to aid in this function. These accessory structures along with the mucous membrane lining must be kept in good condition.

The teeth and mouth should be cleaned after taking food to remove remaining small food particles. The time of morning care is one of the times during the day that mouth hygiene is done. All patients who can do it for themselves should be encouraged to do so. Some post-operative or very ill children or adults need to have it done for them. Some patients will not be taking food by mouth, yet it still needs cleaning due to the collection of albuminous material on the teeth and tongue from mucus and saliva. Sordes and halitosis (an unpleasant odor) are present when the mouth is not carefully cleaned. The patient's mouth may be very dry, especially when there is fever, causing the albuminous material to become hard on the teeth. The lips may also be very dry. It is very annoying to the patient to have the dry lips and dirty teeth and may increase restlessness. Bacteria grow and multiply in an unclean mouth which results in complicating infections. These include gingivitis, glossitis, root abscess, stomatitis, cancrum oris, cheilosis, parotitis, sinusitis, otitis media, tonsillitis and adenoiditis.

The nurse must clean the mouth of helpless patients regularly to prevent problems. It may need to be done two hourly. Some patients will have a toothbrush which can be used; others will not have one. A piece of gauze firmly attached to an applicator may be used.



A cotton applicator, which is softer, may also be used. Care must be taken that the cotton or gauze does not come off in the patient's mouth. A medicated mouth wash may be used for cleaning the mouth, but plain water or a salt solution is just as effective for removing the hardened mucus. Only slightly moistened applicators are used with an unconscious patient so he does not aspirate any fluid. The inside as well as the outer portion of the teeth should be cleaned. Up and down movements of the brush or applicators are used to make sure all particles are removed from between the teeth. The tongue is cleaned as well as the teeth.

A thin covering of vaseline or a cream should be kept on lips that are prone to dryness. Patients who are not able to take fluids by mouth should have the tongue, mouth and lips moistened with water frequently.

A person who has dentures will need them cleaned more often than usual during illness. A person who is accustomed to dentures is usually more comfortable with them in. They should be replaced in the mouth after cleaning unless the patient does not want them or is unconscious. When not in the mouth, dentures should be immersed in water or in a special soaking solution, if the patient has it, in a covered container. Dentures must be handled carefully for they are breakable and should be kept in a safe place when not in the mouth.

### Summary

Good personal hygiene is essential during sickness as well as in health. The daily hygiene routines, not only keep the body clean, but aid numerous physiological functions of the body. Patients are urged to do as much of their own personal care as their illness permits. It helps them maintain a sense of independence and provides valuable exercise. The possible development of a bedsore on an elderly or debilitated patient is



always a concern in nursing care. The most effective means of preventing decubiti is frequently changing the position and frequent massage of the pressure areas. The use of an air, water or foam rubber mattress is helpful in preventing decubitus ulcers.

### **Additional Study Topics**

1. Benefits and techniques of massage.
2. Decubitus ulcer treatments.
3. Dental caries, their cause and prevention.

### **Learning Activities**

1. Describe a correct technique for cleaning the teeth.
2. List at least seven reasons for good patient hygiene.
3. Practise giving a complete bed bath, back rub, mouth care, hair care and nail care to a classmate. The student used as the patient should give comments about each part of the care.

## **CHAPTER 7**

### **MAKING PATIENTS COMFORTABLE**

#### **CHAPTER CONTENTS**

##### **Patient discomfort**

**Signs of discomfort**

**Causes of discomfort**

**Emotional discomfort**

##### **Sleep :**

**Patient's problems**

**Nursing activities to encourage sleep**

##### **Aids to making patients comfortable**

**Pillows**

**Backrest**

**Bed cradle**

**Cardiac (orthopneic) table**

##### **Positions for comfort**

**Body mechanics for the nurse**

**Positioning a patient for comfort**

**Dorsal position**

**Prone position**

**Lateral position**

**Sim's position**

**Fowler's position**

**Semi-Fowler's position**

**Knee chest position**

**Lithotomy position**

**Trendelenburg position**

## **Moving bed patients**

**Moving a patient up in the bed**

**Moving a patient to the lateral position**

**Assisting a patient to the sitting position**

**Assisting a patient to sit on the edge of the bed**

**Assisting a patient from the bed to a chair**

## **LEARNING OBJECTIVES**

1. Recognizing signs and causes of discomfort.
2. Nursing techniques to encourage sleep.
3. Using aids to immobilize, support or protect parts of the body in providing comfort.
4. Principles of body mechanics and alignment for the benefit of the nurse and the patient.
5. Correct alignment for the basic positions for rest and relaxation.
6. Correct, efficient movement of a patient in the bed and in getting into a chair.



## **MAKING PATIENTS COMFORTABLE**

One of the most appreciated skills of a nurse is her ability to provide comfort to her patients. Comfort can be described as being physically and mentally at ease. There is freedom from physical discomfort and pain and freedom from mental disturbance. Physical and mental comfort enables a person to get the greatest benefit from sleep.

### **Signs of discomfort**

A nurse should be able to quickly recognize discomfort in a patient and the cause of it. Some patients speak of their discomfort. Others, because of age, physical state such as unconsciousness, a language problem or shyness do not mention it. An alert nurse detects discomfort from the patient's facial expression or actions when he cannot or does not speak of it. Signs include restlessness, unusual position, change in skin color, facial expression, respiratory changes, increased perspiration and insomnia.

### **Causes of discomfort**

Physical discomfort is due to many things. It may be due to the physiological needs of hunger or thirst, the need to relieve a distended bladder or a collection of gas in the intestinal tract. There may be a headache or pain in some part of the body. There may be a personal hygiene need such as for mouth care. External causes come from noise, lights, temperature, odors, soiled or wrinkled bed linen, clothing, pressure from bandages or orthopedic appliances. Some problems are easily detected and corrected; others require more effort and time.

### **Emotional discomfort**

Physical comfort is incomplete unless there is mental or emotional comfort. Some patients find emotional comfort

in the fact that they are in a place where health problems are understood and treatment is given as required. Because of the confidence and peace of mind they have, they are relaxed and go to sleep easily. Others experience much anxiety about their hospitalization. It is often due to a lack of understanding of the disease, of treatment or of equipment being used. There may be concern for their family or their personal or family's future. Some patients are filled with anger about their disease and the limitations they have from it. It prevents their being at ease and relaxed.

Patients with disturbing emotions need an opportunity to talk about their feelings. The nurse helps the patient by listening. Giving him explanations and answering questions often result in peace and calmness. If talking about it does not relieve the patient's mental distress, the nurse should report his comments and actions to a senior nurse or the doctor. The hospital chaplain is often able to help the patient with anxiety, anger or fear.

Emotional and physical comfort are interrelated. Emotional distress may cause some aspect of our environment to be very annoying which, at a time of emotional tranquility, would go unnoticed. Likewise, a physical discomfort can arouse troublesome emotional feelings. It is sometimes a problem to know which is the cause and which the result. A discerning nurse recognizes many problems and finds solutions by observing and listening to patients.

## **Sleep :**

### **Patient's Problems**

Rest and sleep are required for the body to continue functioning at its maximum efficiency. Our body sets a pattern of activity that is repeated every twenty-four hours. It has been called our 'biological' or 'natural' clock. It is partly responsible for our sleep pattern as

well as periods of alertness and activity. Each person's biological clock is adjusted differently. The effects on the body when the established cycle is disturbed is not fully understood, but there does seem to be resistive reactions in body functioning. Each person's sleep schedule should be permitted as much as possible.

People tend to sleep more than usual during illness, but some have problems of sleeping. There are times when special efforts are made to keep patients awake. However, the most frequent problem is finding ways to help a patient enjoy satisfying rest and sleep.

### **Nursing activities to encourage sleep**

All during the day a nurse's efforts are directed toward the patient's comfort. It may be adjusting a pillow, changing a position; providing a bedpan, giving a drink, listening to problems or giving necessary explanations. In the evening attention is especially directed at providing an atmosphere that promotes sleep. It includes :

1. Providing all possible physical and mental comfort.
2. Reducing lights, noise and hurried activity.
3. Controlling temperature by fans or extra covers as required.
4. Making bed linen clean, dry and wrinkle free.
5. Caring for physiological needs of elimination and cleanliness.  
eg : emptying the bladder or mouth care.
6. Giving a small snack or warm drink if desired.  
No drink containing caffeine is given within six hours of bedtime.
7. Fostering a feeling of security.



As visitors leave and the hospital atmosphere becomes quiet after the day's activities, patients may experience feelings of loneliness and homesickness, sometimes to the point of interfering with sleep. The nurse must show sensitivity and understanding of the patient's feelings. An opportunity to talk about his home and family is often helpful.

### **Aids to Making Patients Comfortable**

There are aids to help keep the body comfortable in good alignment without strain. Pillows, back rest, a bed cradle and a cardiac (orthopneic) table are all useful items in making patients comfortable.

**Pillows** are used for support to maintain correct body alignment. They are used under the head, the arms, the legs and along the spine or abdomen according to the patient's position. Their correct positioning reduces strain on muscles and joints which allows the patient to experience better relaxation and comfort.

**A back rest** is a device for supporting the patient's back at an angle, so that he may maintain a sitting position on the bed when this is desirable. The back rest is adjusted to the desired angle. Extra pillows are needed. Using proper body mechanics and getting assistance if necessary, the nurse supports the patient and puts him into sitting position. The back rest is placed in the correct position on the bed and pillows added carefully so that the back, the head and if necessary, the arms of the patient are well supported. Backrest is used for patients who suffer from cardiac and pulmonary distress since it permits maximal chest expansion. With increasing number of mechanically adjustable beds now available in hospitals, the back rest is less commonly used. An improvised back rest is very useful for nursing patients at home.

A backrest is used to nurse patients in Fowlers or dorsal elevated position :

1. To relieve dyspnoea
2. To promote drainage from abdominal cavity
3. To provide a comfortable change of position

**A bed cradle** is a frame used to hold the bed linen from touching the patient. It is sometimes used to prevent pressure from the weight of the linen. At other times it is used to allow air to circulate around the lower limbs. A light bulb can be attached to provide heat as a treatment. The cradle is often a semicircular frame of metal. It may also be made of wood or bamboo. It may be a rectangular shape if desired. A wood or cardboard box may be made into a satisfactory cradle to hold the bed linen off the feet and legs.

**Cardiac table or Orthopneic or bed table** is usually used for patients who are propped up in a sitting position for change of position. The bed table is placed in front with a pillow on it, on which the patient can lean forward and take rest. The same table is used without the pillow for writing and for meals.

This position is used for patients with cardiac conditions and asthma who cannot breathe easily, in a lying down position. This position makes it possible to use the extra-ordinary muscles of respiration. Position should be changed to relieve fatigue and to prevent embolism.

## POSITIONS FOR COMFORT

### **Body mechanics for the nurse**

Many people are able to move about freely during an illness even though at a slower pace. Others experience more difficulty and some are totally unable to move. They need skilled assistance. Definite plans for position changing and moving should be in the nursing care plan

for all unconscious or paralyzed patients and for those with restricted movement due to surgery, injury or a debilitating illness.

A description and illustrations of good body alignment and posture are found in anatomy, hygiene and other books. Knowledge of the normal relationships of the bones to each other and the muscles involved in movement will help the nurse know how to move and use her own body and how to protect normal alignment and movement of her patient's body.

The bones provide a framework for the soft tissues of the body and help protect the internal organs. Ligaments and cartilage aid the muscles in moving the frame. They are stimulated and controlled by the nervous system. To move or lift patients, the nurse should use her large muscles mainly to do the work. The gluteal muscles of the buttocks and the femoral muscles of the upper leg are the ones to use. They are used by flexing the the knees and hips for lifting rather than by bending at the waist. The back is kept straight when lifting and moving objects in order to protect the small muscles of the spine.

The nurse keeps her balance by having a broad base to support her. She does it by standing with her feet separated and one foot forward. She conserves her muscular efforts by smooth, rhythmical movements and holding the person or object close to her body when lifting or carrying.

### **Positioning a bed patient**

Some patients change their position frequently when ill in bed. Others have limitation of movement and need assistance to move and change position for comfort, speedy recovery and to prevent contractures.





**Fig. 2 — Positioning an unconscious Patient**

A paralysed or unconscious patient, should be positioned in such a way that a clear airway is maintained and bed sores contractures and deformities are prevented so that they will be able to have the fullest possible movement upon recovery. This requires regular frequent changes of position making sure that all joints are in a functioning position and all body parts in correct alignment. Helpless patients should have their position changed every two hours. Care should be given to all pressure areas at the time of changing position. A semi prone position for an unconscious patient will facilitate drainage from the mouth and prevent its accumulation in the pharynx. (Fig 2). There are other commonly used positions for comfort. The method of obtaining good alignment and support in each position is described below.

#### **Dorsal (supine or back-lying) position**

1. A small pillow under the head to keep it in line with the vertebral column.
2. A small pad or pillow under the lumbar curve.
3. The arms slightly abducted on pillows along the sides.
4. The thighs extended.
5. A small pillow or pad under the lower thighs, just above the popliteal area, for slight flexion of the knees or raise the knee rest slightly.

6. The feet about 7 cm (3 inches) apart and kept at right angles to the legs by a footboard that extends 10 to 12 cm (4 to 5 inches) above the toes.

For bed ridden patients a foot rest is used to prevent foot drop.

### **Prone (face-lying position)**

1. The head in line with the vertebral column, but turned to one side.
2. The shoulders supported with small pillows or pads. Arms are flexed at the elbows.
3. A pillow under the abdomen for support.
4. The thighs extended.
5. A pillow under the legs and ankles to allow the feet to be at right angles with the legs and to keep the toes off the bed.

This position is used for patients with burns, injuries or operations on the back. This is also used as a change of position to relieve pressure from bed sore in pressure areas. Prone position is used without pillows for patients after anaesthesia to prevent aspiration of saliva and mucus.

### **Lateral (side-lying) position**

1. Support the head with a pillow to align it with the spine.
2. Support the back with a firm pillow from the neck to the buttocks.
3. Place a pillow in front of the abdomen.
4. The under arm forward and flexed comfortably.
5. The upper arm in abduction, flexed at the elbow and resting on a pillow.

6. Upper leg flexed at the hip and knee and resting on a pillow placed between the knee and the ankle.

A siderail should be in place on the bed when a restless patient is in the lateral position unless a responsible person stays at the bedside.

Left lateral position is generally used for giving enemas, inserting suppositories, for taking rectal temperature and for doing rectal examinations.

### **Sim's (semi-prone) position**



Fig. 3 — Sim's Position

In Sim's position, the patient's weight rests upon the anterior aspect of the ilium, the humerus and the clavicle. A pillow is placed under the head for good alignment unless the position is to promote good drainage from the mouth. The inferior arm is put behind the patient. The superior arm is flexed at the shoulder and the elbow and rests on a pillow in front of the patient. Both legs are flexed. The superior leg is flexed more than the other and supported by a pillow. (Fig 3) It is a very comfortable, relaxing position, and is used for vaginal and rectal examinations.

### **Fowler's (semi sitting) position**

The upper part of the body is elevated 45 degrees. It is most easily done in an adjustable bed, but can be



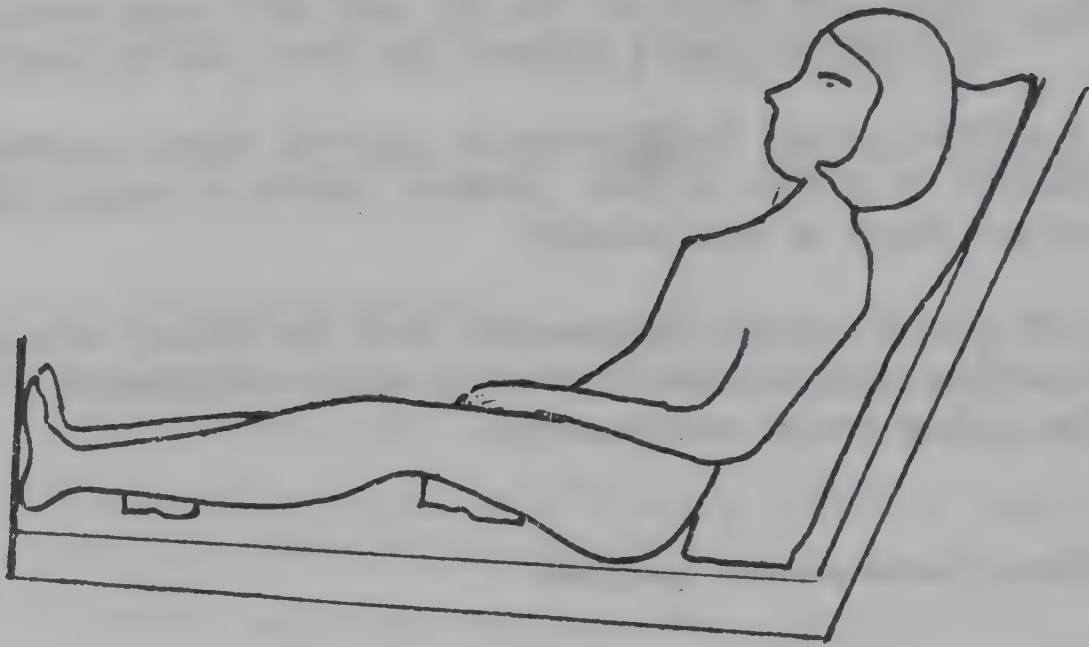


Fig. 4 — Fowler's Position

achieved with a backrest. A small pillow is placed under the lumbar area. Another pillow is used to support the upper back, shoulders and head. A small pillow under the lower thighs will flex the knees. The feet are supported by a footboard. If the patient cannot use his arms and hands, they are supported by pillows. (Fig 4) This position is used to relieve dyspnoea, to facilitate drainage of the abdominal cavity, to localise infection (eg. peritonitis), to relieve tension on the abdominal sutures and to relax the large muscles of the back and thighs. It also gives the patient a sense of well being and makes it easier for him for self care.

### **Semi-Fowler's position**

The upper part of the body is elevated about 30 degrees. It is a very comfortable position and allows patients to see their surroundings. The body is supported in the same way as in Fowler's position. Support is not placed directly under the knees in the popliteal area because pressure on the popliteal artery could interfere with circulation to the lower legs.

### Knee chest or genupectoral position

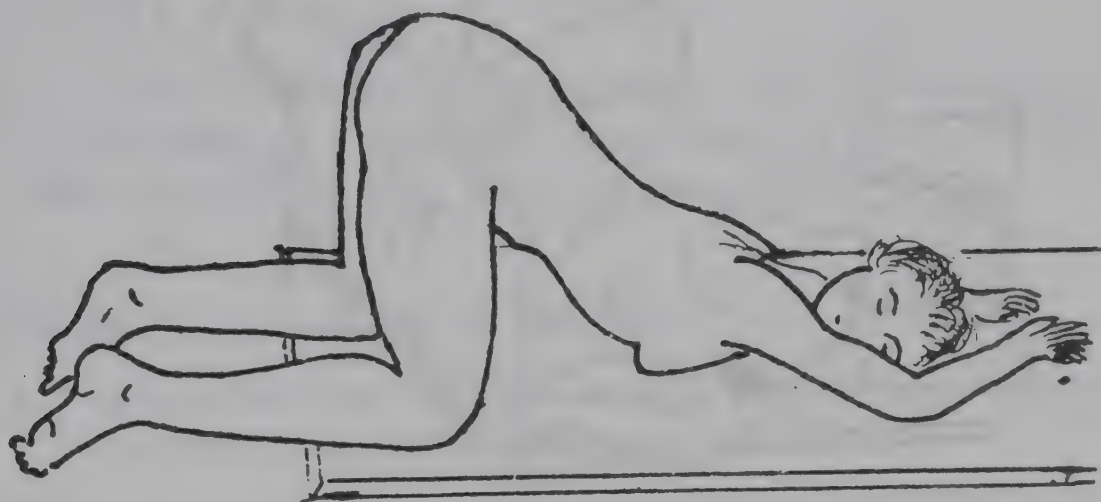


Fig. 5 — Knee-Chest Position

The patient rests on the knees and the chest. The head is turned to one side with the cheek on a pillow. A small pillow may be placed under the chest. The arms are above the head or they may be flexed at the elbows and rest along the sides of the head, so as to support the patient partially. The weight should rest on the chest and knees. The knees are flexed as in a kneeling position and the thighs are at right angles to the legs. (Fig 5) This position is used for the examination of the rectum (sigmoidoscopy) and vagina and as an exercise for post partum patients.

### Lithotomy position

The patient lies flat on the back with the legs elevated, the knees spread, the thighs well flexed on the abdomen and the legs on the thighs. The patient's buttocks are brought to the extreme edge of the table and the legs are supported on the stirrups. (Fig 6) This position is used for the gynaecological examinations and treatments and during the surgical procedures involving the genitourinary system.

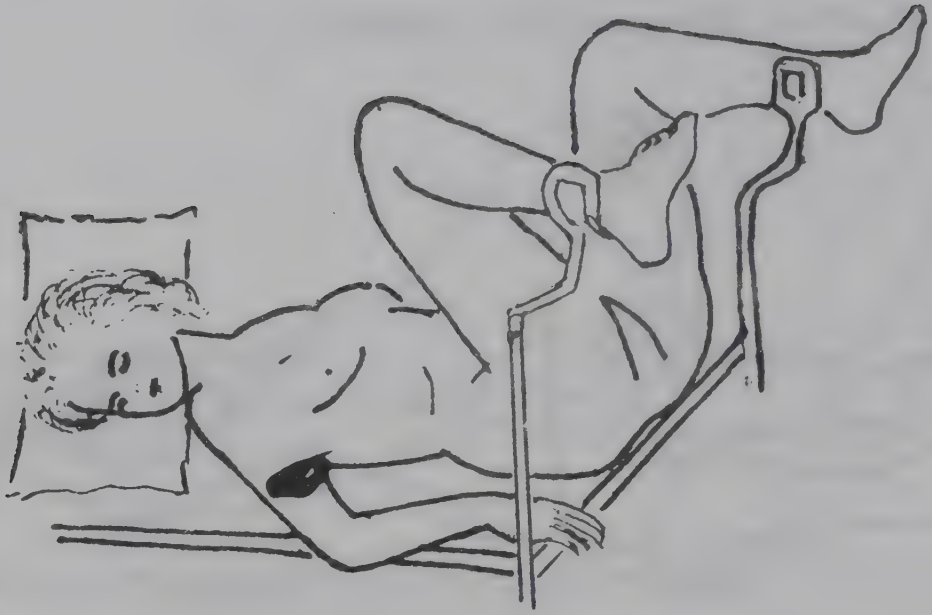


Fig. 6 — Lithotomy Position

### **Trendelenburg position**

The patient lies on the back. The foot of the bed is elevated at a  $45^\circ$  angle. The patient's head is low. The body is on an inclined plane and the legs hang downward over the end of the table. This position is used in treating shock, low blood pressure. It is also used in operation theatre for abdominal surgery.

### **Moving Patients in the Bed**

Moving a patient on the bed is made easier by taking two principles of physics into consideration. One is the effect of gravity. It is easier to push or pull a weight on a level surface than to lift it. Therefore, it requires less effort to move the patient if the bed is flat than when the head of the bed is elevated. However, not all patients can tolerate lying on a flat bed even for a short time. Adjustments in moving them must be made according to the particular problem.

The other physics principle is that reduced friction makes moving an object easier. A smooth surface



decreases the effort needed. It is easier to move a patient when the mattress and sheet are firm and smooth.

The nurse washes her hands before and after changing the position of a patient. She explains to the patient what she will do and how he can assist.

### **Moving a patient up in the bed**

1. Make the bed as flat as the patient can tolerate. Remove the pillow from under the head.
2. The nurse stands beside the bed, partially facing the head of the bed, with her feet separated and the foot nearest the head of the bed in front of the other foot.
3. The nurse flexes her knees and hips, places one arm under the patient's shoulders and one under the patient's thighs.
4. The patient flexes his knees and places his chin on his chest, and if able, pushes against the bed with his hands.
5. The nurse lifts and moves the patient upward as she shifts her weight from the back to the forward leg while extending the flexed joints. Her own weight aids in moving the patient.

Two nurses work together when possible to move a patient up in the bed, especially when the patient is unconscious, totally helpless or very heavy. One nurse stands on each side of the bed. Both make movements at the same time.

### **Moving a patient to the lateral position**

1. Move the patient to the opposite edge of the bed toward which the patient will turn.

2. The nurse then stands on the side of the bed toward which the patient will turn.
3. Move the proximal arm of the patient away from the body.
4. Place the patient's distal arm over the chest.
5. Place the distal leg over the proximal leg.
6. The nurse places one of her hands on the patient's distal shoulder and the other hand on the distal hip.
7. While rolling the patient toward her, the nurse flexes her knees and lowers her hips until her elbows rest on the bed.
8. Arrange the patient comfortably in the lateral position.

#### **Helping a patient to the sitting position**

1. The nurse stands beside the bed at the level of the patient's buttocks, facing the head.
2. The nurse's foot farthest from the bed is placed ahead of the other foot.
3. The patient is in the supine position with his arms at his sides. He flexes his knees.
4. The nurse places her hand, that is distal from the patient, over the patient's shoulder. With the other hand she grasps the posterior portion of the patient's upper arm from under the axilla.
5. By shifting her weight to her back leg and lowering hips, the patient is brought to the sitting position.

#### **Sitting on the edge of the bed (dangling)**

From the sitting position, the patient may be changed to sitting at the edge of the bed with his feet over the

side. For this additional move, the patient's knees are flexed. The nurse's arm nearest the head of the bed is placed on the patient's near shoulder. With the other hand, she reaches over the patient's legs and places her hand under his knees. As the nurse turns her body, she swings the patient's legs over the edge of the bed bringing the patient to a sitting position at the edge of the bed. A stable stool of suitable height is provided for the feet and to help the patient maintain the sitting position. The nurse or some other person remains standing in front of the patient because a patient accustomed to lying flat can easily become dizzy when in the upright position.

When the time of dangling has finished, the patient is helped to lie down. With one hand on the patient's shoulder, the nurse puts her other hand under the patient's ankle and swings him onto the bed and into the supine position. He is made comfortable.

### **Moving a patient from a bed to a chair**

1. Place the chair at the side of the bed with the back toward the foot of the bed and the front of the chair near the patient.
2. Assist the patient to a sitting position on the same side of the bed as the chair has been placed.
3. Help the patient put on a dressing gown or other clothing.
4. The nurse stands in front of the patient facing him. The nurse's foot nearest the chair is placed forward of the other foot.
5. The patient places his hands on the nurse's shoulders. The nurse places her hands on each side of the patient at the waist.



6. As the patient stands on the footstool or floor, the nurse places her forward knee against the patient's knees to stabilize and support them.
7. When the patient feels steady and secure, the nurse moves her forward foot back one step while guiding the patient to the chair.
8. The nurse flexes her knees and hips as the patient sits down in the chair.
9. Make the Patient comfortable.

### **Helping the patient from the bed into a wheelchair**

The above procedure is followed with a wheelchair. It is brought beside the bed. The brake is put in the 'on' position to prevent the chair from moving. The foot and leg rests are folded out of the way until the patient is seated, then put in position for use as necessary.

### **Summary**

Making a patient comfortable is a very satisfying experience to a nurse. Observation and attention to details of the environment, physiological needs, positioning and movement of the patient help the nurse become successful in the art of making patients comfortable. There are a variety of simple aids that increase the comfort of the patient. A nurse must be mindful of her own body movements when caring for her patients. Careful, efficient use of her muscles will prevent strain and injury to her when she lifts and moves patients and equipment.

### **Additional Study Topics**

1. Sleep patterns and their disruption.
2. Methods of relieving and controlling pain.
3. The physics of movement and moving objects.

## Learning Activities

1. Select a bed patient and carefully observe all the causes of physical discomfort for one day. Make a list of them along with the method used to relieve each discomfort.
2. Select two patients. Discuss with them what helps them go to sleep and what hinders them from going to sleep.
3. Practice moving your own body for bending and lifting according to the principles of good body mechanics.
4. Using a classmate as a patient, practice positioning her in all the basic positions and moving her in the bed.

## **CHAPTER 8**

# **CARING FOR THE PATIENT'S SPIRITUAL NEEDS**

### **CHAPTER CONTENTS**

**The need for spiritual satisfaction**

**Spiritual needs in illness**

**The influence of religious beliefs on medical care**

**The influence of religious beliefs on diet**

**The role of a chaplain**

**Recognizing those in need of spiritual help**

**Aids to spiritual help**

**Scripture reading**

**Prayer**

**Holy Communion**

**Baptism**

**Devotional books**

**Music and singing**

**Anointing of the sick**

**Religious objects**

### **LEARNING OBJECTIVES**

1. **Recognizing those who will benefit from spiritual help.**
2. **Recognizing religious influences on health and health care.**
3. **Using religious aids in the spiritual care of patients.**



## CARING FOR THE PATIENT'S SPIRITUAL NEEDS

All men are born with a spirit. It is the spirit that causes man to question within himself, "What is the meaning of life? What is death? Is there life after death? What becomes of the spirit? Is there a supreme being? Is it God?" The purpose of religion is to answer questions regarding the spirit and meet spiritual needs. Religions have systems of beliefs established to answer the questions of man's spirit. Religions do not all give the same answers. Each person searches for the religion that gives answers that satisfy his spirit.

There is a need in all men to believe in an authority and power that is higher than man. Man worships the authority he considers higher than himself and worthy of worship. The religion that provides satisfying answers to the deep questions of the spirit and provides a worthy person to worship claims the devotion of the seeking person. We want a religion that expresses love and gives courage in place of fear. Religions have practices relating to birth, death, marriage and salvation.

In times of illness, the thoughts of many people turn to spiritual things. The additional time to think, the uncertainty of life and the inability to control the course of events cause people to look for something secure and permanent in which to believe. Help is needed to face fears of death, past actions, life after death and to know what God is like. People want to know how to have a peaceful heart. They need to feel love and concern for their spiritual welfare.

Religious beliefs may have a great influence on a person's illness. Some people believe that no medical aid should be sought during illness, but the person should rely on prayer and faith for healing. Medical help is

permitted by some groups, but not surgery. Some religious groups do not permit a blood transfusion. Most religious groups teach that all possible means should be used to save life.

Religious faith is often a very positive influence in the recovery of a patient. The person who has faith in the goodness, love and power of God and is at peace with God, with other men and with himself recovers from illness in less time and with less complications than the person who does not have peace and trust. There is less stress in the person with a positive faith which permits all of the body's resources to fight the illness.

A person's diet is often influenced by religious beliefs. They influence the type of food taken or the way it is prepared. It may cause problems in supplying the food nutrients needed by a patient. Sometimes dietary restrictions do not apply during illness. Most dietary problems can be overcome by consulting the patient or his family and by careful planning without offending religious beliefs.

Hospitals are finding the services of a religious advisor or counsellor so valuable that one or more chaplains are often employed as full time members of the health team. They are trained to minister to the spiritual needs of every person regardless of religious affiliation. Where there is no chaplain, local priests or pastors usually give spiritual counsel when requested. The presence of a chaplain does not interfere with local clergy visiting patients in the hospital. A nurse must be prepared to answer the spiritual questions of patients, give guidance to meet their needs and pray with them when a chaplain is not available. The ability to give spiritual guidance and comfort increases the patient's confidence in a nurse.



Chaplains usually try to visit all newly admitted patients and all with special needs. They appreciate information from the nursing staff of patients needing their services. Nurses are in a position to recognize spiritual needs and those who would benefit from the ministry of a chaplain. They include patients who express fear and anxiety, those who appear lonely and have few visitors and those whose illness is related to religious attitudes. Patients who are to have surgery and those whose living pattern must be greatly changed as a result of their illness or injury are helped by the spiritual ministry of a chaplain. Dying patients need the encouragement and strength provided by a spiritual guide. Often members of a patient's family require spiritual counsel. All available services should be provided to them.

There are a number of aids to use in providing spiritual help. Scripture reading is a source of comfort, encouragement and guidance. If the patient cannot read, a staff or family member should be encouraged to read to him. Many people find great consolation in prayer. A patient may wish a time of uninterrupted quietness to pray. He may want the chaplain, a nurse or some other person to pray for him. His desire should be granted. A patient may like a prayer book to read or have read to him. Patients are often very grateful to have holy communion administered by a chaplain, priest or pastor. Privacy is provided and any assistance that is required. Sometimes baptism is requested and arranged for a patient. In an urgent situation, if no one is available to do it, a nurse may baptise a Christian patient by placing water on his head with her hand and repeating the words, "I baptise you in the name of the Father, and of the Son, and of the Holy Spirit. Amen."

There are many devotional and inspirational books and pamphlets that can be given to patients to read for



encouragement and inspiration. Some religious groups provide them to hospitals for distribution. They should be carefully chosen and presented at an appropriate time.

Music and singing have a calming, comforting effect on most patients. Singing praise and devotional songs is effective in encouraging and lifting the spirit of patients. One nurse, who had a habit of singing while caring for unconscious patients, was later recognized by her voice by a patient after he regained consciousness. He told her that though he could not respond, he understood that he was seriously ill, but her singing made him believe she was hopeful of his recovery. The singing of appropriate songs is a powerful source of help.

There are some religious groups that practice anointing the sick with oil. It should be arranged if a patient or his family requests it. Privacy and a quiet atmosphere should be provided with sufficient time for scripture reading, meditation and prayer.

Patients may have religious objects that are meaningful to them in their worship or prayer. They are to be protected from loss, damage or desecration. The patient is encouraged to derive all possible benefit from their use. Patients, who must be fed, are allowed time to say grace, if desired, before the feeding starts.

### **Summary**

Religious practices and beliefs of patients must be respected. The spiritual needs of patients must be recognized and efforts made to meet them. The physical state of a person may be directly or indirectly related to a spiritual problem. The nurse should know where and how to obtain spiritual help for a person of any religious faith. She herself, should be able to offer understanding, hope, comfort and spiritual guidance when necessary.

**Additional Study Topics**

1. Religious beliefs affecting health.
2. The role of religion in the development of medicine and nursing.
3. Faith, prayer and physical healing.
4. The role of music in healing.

**Learning Activities**

1. Talk with patients of different religious backgrounds to learn if their beliefs affect their treatment or recovery.
2. Select a patient having few visitors. Offer to read Scripture to him and pray with him. Carefully note changes in his attitudes and actions.
3. Try singing quietly as you go about your work in the nursing unit. Report changes you note in the patients along with comments they make.

## **CHAPTER 9**

# **MEETING THE PATIENT'S NUTRITIONAL NEEDS**

### **CHAPTER CONTENTS**

**Caloric needs**

**Basic food groups**

**Dietary influences**

**Types of special diets**

**Clear liquid diet**

**Full liquid diet**

**Soft diet**

**Low fat diet**

**Low sodium diet**

**Preparing and serving food**

**Nursing responsibilities**

**Feeding helpless patients**

**Tube feedings**

**Inserting a naso-gastric tube**

**Types of liquids used for feedings**

**Tube feeding technique**

### **LEARNING OBJECTIVES**

- 1. Normal dietary needs.**
- 2. Changes of dietary needs because of illness.**
- 3. Types of diets used in illness.**
- 4. Nursing responsibilities in meeting dietary needs.**
- 5. Principles of feeding helpless patients.**
- 6. Technique of inserting a naso-gastric tube.**
- 7. Giving a tube feeding.**



## MEETING THE PATIENT'S NUTRITIONAL NEEDS

Food is a basic need of the body for maintaining life and health. Nutrition during illness should be adequate to prevent weight loss and weakness. An acutely ill or injured patient is in danger of malnutrition. Problems in maintaining nutrition during illness may arise from the effect of the disease or the effect of the medications on the digestive system. Sometimes the patient is permitted nothing by mouth.

### Caloric needs

One calorie per hour for each kilogram of body weight is needed to carry on the basic body functions of respiration, circulation, urine formation and the regulation of body temperature. A woman weighing 50 kg (110 lbs) requires 1200 calories for the basic functions. 1600 calories is needed by a man weighing 68 kg (150 lbs). Activity increases the number of calories needed.

Still other factors influence the need for calories. Surgery produces body stresses that increases the caloric need up to 2500 to 4000 calories per day in the immediate postoperative period. Patients, who have had severe injuries, infections or burns, may need up to 10,000 calories daily to maintain their weight. Every degree of fever above normal increases the metabolic rate by 7 percent, thus increasing the caloric intake need.

Though the caloric need is increased in illness, the desire for food and the ability to take it are often decreased. Special effort is required to keep the nutritional state of patients at a satisfactory level especially during an illness that requires increased nutrients. Patients should take a normal, well balanced diet except when special nutritional requirements must be met.

## Basic Food Groups

A well balanced diet contains food from the four basic food groups 1) milk and milk products, 2) Meat, fish and poultry, 3) bread and cereals and 4) fruits and vegetables. When foods from all four groups are eaten, the person gets protein, carbohydrate and fat along with some of all the vitamins and minerals required by the body.

Milk and milk products include curds, buttermilk, soya-bean milk and cheese. The group provides calcium, proteins and fats to the diet. It is recommended that children have 500 to 750 ml of milk daily, teenagers 1000 ml, adults 500 ml, pregnant women 750 ml and women, who are breast feeding an infant, 1000 ml daily. Milk products may be used instead of the actual milk. When there are problems in obtaining a sufficient amount of milk, a high calcium food, such as ragi, may be substituted for a part of the requirement.

The meat group of foods is the most important source of proteins. They are necessary for the growth and repair of body tissues. All types of meat are included in the group. For vegetarians and those who do not obtain sufficient meat, there are other good sources of protein including eggs, dhal, grams and beans. Whole grains, nuts and dark green, leafy vegetables have less protein, but contain other valuable nutrients. Soyabeans are a good protein source and can be prepared in various tasty ways. However, they have not been widely used in the diet, but several supplemental preparations are available to add to usually prepared dishes and increase the nutritive value without changing the taste.

Cereals provide the main energy foods for the body because they have a large amount of carbohydrate. They are the grains of plants such as wheat, rice, ragi, barley and others. The cooked grains, bread, iddalies, chappatis and similar preparations made from grain are



included in this group of foods. They are an economical item of the diet. Whole grain dishes provide the B group of vitamins to the diet.

Vegetables and fruits are needed in the diet for their vitamins, minerals and fiber. Many of them may be eaten either raw or cooked. Citrus fruits, papaya, guava and tomatoes are rich in vitamin C. Most dark green and yellow vegetables and fruits are rich in vitamin A. The fiber is needed for good elimination of waste materials of the digestive processes.

### **Dietary Influences**

The family income is an important consideration in its dietary habits. A good, nutritious diet need not be costly. Wise counsel and planning help families improve their diet when they desire to do so. Nurses have the responsibility and privilege of encouraging people to improve their diet and other health practices.

Food habits are strongly influenced by religious beliefs. With special thought, a good, well balanced diet can be planned that will be acceptable to the patient without offending his religious beliefs. It is usually easier if the patient or his family help plan the diet.

### **Types of Diets**

The diet of a patient is a very important part of his treatment. It is preferred that all patients have a good, well balanced diet, but some medical and surgical problems require a modified diet. Some patients are given nothing by mouth for a time as a part of their treatment or to perform certain tests or surgery. Different diets may be ordered, as tolerated by the patient. Diets most often ordered are :

**Clear liquid diet :** Plain tea or coffee, clear broth, strained fruit juice or gelatin may be given.



**Full liquid diet :** In addition to all clear liquids, milk, milk drinks, creamed soups and all fruit juices may be given. Custards, puddings and ice cream are included in this diet.

**Soft diet :** All foods that are mild in taste, are easily chewed and digested and contain very little fiber are permitted. White bread, rice, iddalies, potatoes, plantains, poached eggs, steamed fish and cooked fruits, vegetables and meat (cooked until very tender) may be used. No fried or spicy foods should be used in a soft diet.

**Bland diet :** This diet is used in the treatment of stomach and intestinal problems. Mild flavored, non-irritating, easily digested foods are given. Fried foods, cabbage, onions, coffee, tea and spices are not allowed.

**Low fat diet :** Fats in the form of butter, ghee, oils, and fried foods are restricted. It is necessary to restrict fats in gall bladder and liver disease.

**Low sodium diet (low salt diet) :** Sodium is restricted when there is any disease in which there is swelling of tissues. The diseases include congestive heart disease, kidney disease and pregnancy complications. Table salt is the biggest source of sodium. Food should be prepared without salt or soda bicarbonate. Salt substitutes are available and may be used. Food may be seasoned with herbs to make it tasty without adding sodium.

### **Preparing and Serving Food**

There are different ways of meeting the dietary needs of patients. Some hospitals have dieticians who plan and supervise the preparation of food. In some hospitals, the family is permitted to prepare the patient's food. A hotel or private individual may be given a contract

to supply food to hospital patients. When food comes to a patient from a source outside the hospital, it is more difficult for the nurse to control the diet. In most cases, the family or others preparing the food, sincerely wish to provide the correct diet and will try to follow instructions. Make sure they are clearly given. Continuing supervision and guidance are necessary.

**Nursing responsibilities** for the dietary needs of patients on either a general or special diet are :

1. Know the patient's economic, religious and cultural background, his food habits and food allergies. Inform the doctor if any of these affect his taking the diet he needs.
2. Know the diet ordered for each patient, the principles involved in it and be able to calculate the nutrients in foods the patient can afford and will accept.
3. See that the correct diet is prepared properly and safely. Give instructions to the family or others preparing the food as they are required.
4. See that the food is served attractively in the right amount and at the right time.
5. Make sure the food is taken by the patient, feeding if necessary or recording the reason if it cannot be taken.
6. Report the amount of food taken, how it is tolerated and problems that arise from it.
7. Teach the patient and family clearly about the diet to be followed after discharge.

Food may be served to the patients by the dietary department or it may be brought to the unit for the

nursing staff to serve. Either way, the nurse is responsible for each person to get the correct diet. She must provide for assisting handicapped persons and feeding helpless patients. Bed patients are offered a bedpan before meals and the face and hands washed. The bed is adjusted to be in an upright position as nearly as possible in order to make eating easier.

### **Feeding helpless patients**

For feeding a patient, a towel is placed in position to protect the patient's clothing and the bed linen. It is best for the person doing the feeding to be on the patient's right and to sit if possible. It will help the patient to feel unhurried. If he can hold any of the food and eat, he should be encouraged to do it. Allow sufficient time for the patient to chew and swallow each bite. Conversation should be light and pleasant. It is not the time for teaching or discussing controversial topics. Mealtimes should be pleasant and relaxing.

When the patient has finished eating, remove the tray and the towel. Attend to the patient's hygiene needs. The nurse, by practicing good principles of hygiene in feeding the patient, is doing far more effective teaching than may be accomplished in a well planned lesson. The patient's position is changed to provide continuing comfort and relaxation.

### **Tube feedings**

Patients who are unconscious or have problems of the mouth, throat or esophagus are unable to take food or fluids by mouth. Liquid feedings that maintain their nutritional and fluid needs are often given through a rubber or plastic tube called a **naso-gastric tube**. It is inserted through the nose and passed through the nasopharynx, pharynx, oesophagus and into the stomach. In some cases a tube is inserted surgically through the



abdominal wall directly into the stomach — a procedure called a **gastrostomy**. A gastrostomy tube is usually larger than a naso-gastric tube, but the feeding procedure is the same. A tube feeding is also called a **gastric gavage**.

Naso-gastric tubes come in adult, pediatric and infant sizes. Plastic tubes are firm and slippery which makes them easy to insert. Rubber tubes are more limp and soft. They need to be chilled in a bowl of ice water to make them stiff for easier insertion. Inserting the naso-gastric tube and giving tube feedings are not sterile procedures, but a high level of cleanliness is maintained to prevent gastro-intestinal infections.

### **Inserting a naso-gastric tube**

A plastic is lubricated by dipping the end in a small bowl of water or by using a water-soluble lubricant on it. A rubber tube is lubricated with a water-soluble lubricant. When a naso-gastric tube is to be inserted, a tray is prepared containing the tube, lubricant, a bowl of ice water (if a rubber tube is used), a clamp, adhesive plaster, a towel for protecting the patient's clothing and a 20 ml (or larger) syringe for aspirating the tube. It is taken to the bedside. The procedure is explained to the patient. He is assisted to an upright sitting position, if possible. If he cannot sit up, he may lie on his back or right side.

Some tubes have a mark showing how far the tube should be inserted. The distance varies according to the height of the patient. When the tube is unmarked, the distance for inserting is determined by measuring the distance from the bridge of the nose to an ear lobe and then to the tip of the xiphoid process. Place a mark on the tube.

A towel is placed over the patient's chest to protect his clothing. The patient holds his head in the natural,

upright position for beginning the insertion. Lubricate the tip of the naso-gastric tube with water or lubricant. (Oil is not used as there is a possibility of some getting into the trachea and producing pneumonia.) The tube is held about 7 cm (3 inches) from the tip and inserted into the nostril. It is advanced forward and downward. The patient's eyes will water and he will have a tendency to move his head away. Encourage him to hold his head in position. As the tube passes into the pharynx, usually about 7.5 cm (3 inches), the patient should flex his head until his chin is resting on his chest. This will help the tube go into the posterior pharynx instead of the mouth. As the patient takes shallow breaths and swallows repeatedly, the tube is gently advanced. Swallowing causes the epiglottis to close and prevents the tube going into the trachea. It also helps the tube move down the oesophagus. If there is excessive gagging, the patient is allowed a few moments of rest before proceeding.

When the estimated length of tubing has been passed, it is checked to see if it is in the stomach. It is checked by using a syringe to aspirate gastric contents. If nothing is obtained, the tube is advanced or the patient's position changed. Lying on the left side is often helpful. If the tube goes into the trachea, the patient is unable to speak. There will be severe coughing if it reaches the lower end of the trachea. It is immediately withdrawn if there are signs of it being in the trachea.

The tube is kept in place by a small piece of adhesive plaster wrapped around the tube and each end put up over the nose. There are other methods of placing the plaster which work equally well. There must be no pressure from the tube against the nasal tissues. When not being used to give a feeding, the tube is kept clamped at the end and fastened to the patient's clothing.



### **Liquids given as a tube feeding**

The amount, frequency and kind of feedings given are prescribed by the doctor. There are commercially prepared formulas available. However, it is possible to prepare a variety of liquids in the hospital or in the home. Milk and milk drinks, eggnog, meat broth, clear soup, and strained fruit juice may be used. If an electric blender is available, cooked fruits and vegetables can be liquified and given through the tube. The liquid should be at room temperature when it is given. Refrigerated liquids are warmed by putting the container in a basin of warm water.

Medications may be given through the tube. Pills are crushed; capsules are opened and the contents added to water or other liquid. The medication is given at the beginning of a feeding in case the full amount of liquid is not given.

### **Tube feeding technique**

There are several types of equipment that may be used in giving the feeding. The feeding may be put in a glass bottle or a plastic bag and suspended from an intravenous stand. Formula may come in a set that is ready to attach to the gastric tube. An asepto syringe may be used to put the fluid into the tube. A funnel may be attached to the tube and the fluid slowly poured in. With any method of giving the fluid, care is necessary to prevent air from entering the stomach. It is given slowly enough that there is no discomfort to the patient. Usually 250 ml should require about 30 minutes to give. A small amount of water is given through the tubing after a feeding in order to rinse the tube.

At the completion of a feeding the tube is clamped, the equipment disconnected, cleaned and kept ready for the next feeding. The type and amount of feeding is recorded on the patient's chart.



## Summary

The body has a higher caloric need during illness, but most people have decreased appetite when sick. The patient's disease or injury may require a liquid, soft or other special diet which adds to the problems of providing adequate nutrition. Unconscious patients and those with certain other problems can often be given nutritious liquids through a tube until they can take fluids normally. It has been a life-saving method for many patients. A good knowledge of foods and their nutrients is essential to good nursing.

## Additional Study Topics

1. Economical, well balanced diets.
2. Calculation of dietary nutrients.
3. Religious and cultural influences on dietary habits.
4. The effects of stress on caloric requirements of the body.
5. Fats, cholesterol and health.

## Learning Activities

1. Select a patient receiving a full liquid diet. Calculate his caloric and nutrient intake for one day. Suggest ways of improving his liquid diet.
2. Have a classmate feed you a meal while you lie flat on the bed for part of it and in a partially sitting position for the rest of it. What is pleasant and what is unpleasant about being fed?
3. Observe a number of patients eating a meal. Note what improved their eating and what reduced their ability to eat.
4. Assist a doctor or staff nurse insert a nasogastric tube.
5. Plan a 2000 calorie daily tube feeding diet.

## **CHAPTER 10**

### **CARING FOR ELIMINATION NEEDS**

#### **CHAPTER CONTENTS**

##### **Urinary elimination**

**Anatomy of the urinary tract**

**Terminology related to urination**

**Composition and characteristics of urine**

**Abnormalities of urine**

**The act of urination**

**Use of a bedpan**

**Use of a urinal**

**Cleaning bedpans and urinals**

**Nursing measures to induce urination**

**Catheterization**

**Equipment**

**Female catheterization technique**

**Male catheterization technique**

**Nursing care of a patient with a retention catheter**

**Removal of a Foley catheter**

**Collection of a urine specimen**

**A voided specimen**

**A clean catch specimen**

**A 24-hour specimen**

##### **Intestinal elimination**

**Anatomy and formation of feces in the digestive tract**

**Characteristics of normal feces**

**Abnormalities of feces**

**Bowel function**

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## **Problems of elimination**

**Hyperactivity — diarrhea**

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## **Types of enemas**

**Cleansing enema**

**Oil-retention enema**

**Glycerine enema**

**Other types of enemas**

**The rectal suppository**

**Return-flow enema**

## **Use of a flatus tube**

## **Collection of a stool specimen**

## **Colon irrigation**

## **LEARNING OBJECTIVES**

1. Recognition of normal and abnormal characteristics of urine and recording of significant observations.
2. Positioning a patient on a bedpan correctly
3. Sanitary cleaning of bedpans and urinals.
4. Nursing measures to induce urination
5. Safe, sterile technique of catheterization.
6. Care of a patient with a retention catheter and gravity drainage system.
7. Methods of collecting urine specimens.
8. Recognition of normal feces and of abnormalities in the appearance of feces.
9. Causes of intestinal hyperactivity and hypoactivity.
10. Techniques of giving a cleansing enema, an oil enema and a return-flow enema.
11. Technique of using a flatus tube.



## CARING FOR ELIMINATION NEEDS

Elimination refers to the expelling of waste materials from the body. It takes place through the lungs, skin, urinary system and the intestinal tract. Elimination by all four routes are natural processes that must occur for the maintenance of good body function and health. While some fluid leaves the body through each route of elimination, the largest amount is excreted as urine through the urinary system. Small amounts of salts and other mineral compounds are excreted in the fluid waste, but most of the solid waste leaves through the intestinal tract.

The elimination of wastes is a natural function, but because of cultural practices and personal habits, many people find it embarrassing to need help to care for normal elimination. Respectful assistance given in privacy is helpful in causing a patient to feel at ease.

### URINARY ELIMINATION

#### **Anatomy**

The urinary system is composed of two kidneys, two ureters, a bladder and the urethra. The kidneys lie against the posterior wall of the abdomen. The ureters are tubes from each kidney to the urinary bladder. The urethra is a tube from the bladder to the outside of the body. It is about 4 cm (1½ inches) long in the female and 20 to 23 cm (8 to 9 inches) long in the male. In the female, the urethral opening is under the folds of the labia. In the male, it opens to the outside at the distal end (head) of the penis.

The kidneys regulate the amount of blood circulating in the blood vessels by removing the excess water. They also remove excess amounts of certain minerals.

toxins and waste products of metabolism. The fluid and chemicals removed from the blood by the kidneys form urine. It is carried by the ureters to the bladder. The urinary bladder is a muscular bag that expands as it fills with urine. As the bladder fills, nerve endings in the muscles of the wall are stimulated which causes the desire to urinate. A woman will feel the urge to urinate when about 250 ml. of urine has collected in the bladder. The bladder of a man may have 300 to 500 ml of urine in it before the nerve endings are stimulated. Since the muscular wall will stretch and a person can control the passing of urine, the bladder may, at times, contain very large amounts of urine. In some cases, when a person is unable to urinate, 3000 to 4000 ml of urine may collect in the bladder. The muscle walls of the bladder are injured by overstretching. Retained urine is removed by a catheter and the cause of retention treated.

### Terminology related to urination

Different terms are used for passing urine. **Urination**, **micturition** and **voiding** are most commonly used. Patients often use a term that has been used in the family or community. A decreased amount of urine passed is called **oliguria**. A complete lack of urine is **anuria**. If the anuria is due to the kidneys failing to produce urine, it is called **suppression**. When urine is produced, but kept in the bladder, it is known as **retention**. Uncontrolled urination is **incontinence**. If a person must urinate often, it is called **frequency**. **Dysuria** is painful urination. **Polyuria** is an abnormally large amount of urine. **Glycosuria** is sugar (glucose) in the urine. **Albuminuria** is albumin (protein) in the urine and is sometimes called **proteinuria**. **Pyuria** is pus in the urine. **Calculi** are stones, formed from minerals, in the urine. **Haematuria** is blood in the urine. **Chyluria** is chyle in the urine giving it a milky appearance.



## **Composition and characteristics of urine**

Normal urine is composed of 95 percent water, 3.7 percent organic wastes and 1.3 percent inorganic wastes. About half of the organic waste is urea from protein metabolism. Minerals, toxins, pigments and other substances make up the remaining organic waste. Normally urine contains a few white blood cells and epithelial cells. Some drugs are excreted through the urine.

Urine is normally pale yellow in color, often called amber or straw color. A brown color urine is usually caused by bleeding somewhere in the urinary tract or by an excessive amount of bilirubin (bile pigment). Certain medications affect the color of urine. A patient should be informed if a medication is likely to change the color of his urine.

Urine has a slight odor that is not unpleasant. If it is allowed to stand at room temperature for a time, bacteria will change urea into ammonia which does have a strong, disagreeable odor. Any other unpleasant odor is abnormal and due to some disease process.

The **specific gravity** of urine refers to the amount of solids in it. It is determined by the weight of a given volume of urine as compared with the weight of an equal volume of distilled water. A urinometer is used to measure specific gravity. The normal range is 1.015 to 1.025 on the urinometer scale.

Urine is usually slightly acid, but a completely vegetarian diet can cause it to be slightly alkaline. The pH is usually between 5.5 and 7.0. A freshly voided specimen should be used to determine the pH as ammonia formed by its standing may cause it to show greater alkalinity. Certain drugs given to a patient will affect the reaction of urine.



## **Abnormalities of urine**

Abnormal substances in urine indicate a health problem. The abnormal substance may be pus cells, red blood cells, calculi, casts, albumin, sugar, acetone bodies or bacteria. Calculi are large enough to be seen without a microscope. The other abnormalities are found by laboratory examination or tests.

## **The act of urination**

A person can urinate most easily in the position they are accustomed to using. Some use a standing position; others a sitting or squatting position. In a hospital, a patient should be encouraged to use the toilet where the normal position can be used. However, some patients, due to their illness, will need to use a bedpan or a urinal.

A female usually uses a bedpan for both urination and defecation. A male patient uses a bedpan for defecation and a urinal for voiding. There are two types of bedpan. The regular badpan comes in two sizes — the adult and pediatric sizes. The second type is called a fracture pan because it was designed for patients who could not lift their hips due to a bone fracture. It tapers to being almost flat at the end that goes under the patient's buttocks. It can be put between the legs and slid upward under the buttocks. It is much easier to slide under patients, who cannot be rolled to the side or lifted at the hips, than a regular bedpan.

A bedpan cover may be of non-rusty washable metal or of heavy cloth that can be laundered and used again or it may be a disposable paper cover. A bedpan and its cover are kept in a specified place in the service area of the nursing unit. The bedpan should not be in the bedside locker if the patient has to keep his personal belongings there.

Using a bedpan is not a pleasant experience to most people. Patients, who must use one, must be provided with maximum privacy to do so. The rim of the bedpan is made more comfortable for the patient by placing a folded cloth or towel on it. A small amount of powder on the rim will make it slip under the patient easier.

The two most common ways of putting a patient on a bedpan are by 1) lifting the patient's buttocks and sliding the bedpan under, or 2) by turning the patient to one side, then rolling her back onto the bedpan. The first method is used for patients who can help in getting on the bedpan. It is done by asking the patient to flex the knees. The nurse places one hand under the lower back of the patient and with her other hand, slides the bedpan under the buttocks as the patient also lifts the hips. The upper end of the bedpan should be at the sacrum. Raise the head of the bed if the patient's condition permits it. Leave the patient and return in a few minutes or when called, unless the patient is seriously ill or senile. Ensure that the patient has finished using it.

If the pan is full, a specimen to be collected, or urine to be tested, change the patient on to a clean bedpan. Pour water, without soiling the bed, until the part is clean, or offer toilet paper, for cleanliness and comfort. A can with a rubber tube attached can be used to pour water. If the patient is unable to clean himself the nurse must clean the perineal area using cotton or rag pieces or toilet paper.

To remove the bedpan, the patient is asked to flex the knees and lift the hips as the nurse gently pulls the bedpan away. If the patient is unable to lift the hips turn the patient to one side and remove the bed pan. Cover the bedpan immediately and place on a chair or stool. Dry the patient's back with a towel. Provide a basin of water, soap and a small towel for the patient



to wash her hands if necessary. Make her comfortable in the bed.

Some patients are unable to co-operate in getting onto a bedpan. It is usually best to turn the helpless patient to one side. The nurse then stands on the side of the bed facing the patient's back. With one hand the nurse holds the bedpan against the patient's back and, with the other hand on the patient's hip, she rolls the patient onto the bedpan. Check the position of the bedpan to make sure it is correct and comfortable. Raise the head of the bed if permitted.

After the patient has used the bedpan, lower the head of the bed. Clean the perineal area as mentioned above. With one hand under the hips, roll the patient to the side while using the other hand to keep the bedpan steady and remove it. Cover and place it on a chair. Wash and dry the perineal area and make the patient comfortable.

Patients who cannot have the hips raised high enough to use a regular bedpan, may be able to use a fracture pan. The patient's legs are separated and the fracture pan, with the rim powdered, is placed between the legs and slipped upward under the buttocks while lifting the hips slightly with one hand. Sometimes a patient can be rolled to one side and placed on a fracture pan. After the patient has used the pan, remove it and clean the area. Leave the patient dry and comfortable.

There are female urinals available for women who cannot use a bedpan. A female urinal has a wide rim at the top shaped to fit closely around the outer portion of the patient's vulva. The urinal may need to be held in place by the nurse as the patient uses it. After its use and removal, the patient's perineal area is cleaned and she is made comfortable.



A male urinal is made of plastic or metal. For the patient who can help himself, the nurse hands him the urinal and leaves the room for a sufficient length of time. If the patient cannot help himself, the nurse separates the patient's legs and places the urinal between them, moving it upward so the head of the penis is well inside the urinal. A male nurse or orderly, if available should always assist the male patient. Cleaning of a male patient after urination is not necessary. The patient is provided water, soap and a towel to wash his hands. He is made comfortable.

### **Cleaning Bedpans and Urinals**

The bedpan or urinal is taken to the service area for emptying and cleaning. If the patient is having a record kept of his fluid intake and output, the urine is measured and the amount recorded. Collect a specimen, if required, and empty the remaining urine into the toilet and flush. If a patient is known to have or suspected of having calculi in the urinary tract, the urine is strained and the strainer examined carefully for stones. If any are found, they are shown to the doctor.

The bedpan or urinal is cleaned by rinsing it with cold water, then by scrubbing it with a long-handled brush and an antiseptic solution. Again rinse with water and return it to the place of storage.

The time of voiding, the amount and color of the urine is recorded in the patient's record. If there was any problem in passing the urine or any abnormality of appearance, it is recorded.

### **Nursing Measures to Induce Urination**

Patients are sometimes unable to urinate due to a disease process, following abdominal surgery or after being given a general anaesthetic. There are nursing measures

that often give the patient the ability to void. They include :

1. Have the patient assume the natural position for voiding.
2. Make sure there is an adequate fluid intake.
3. Pour warm water over the perineum.
4. Let water run from a water tap in the room.
5. Have the patient sit in a large basin or tub of warm water.
6. Make light circular movements over the bladder area with the finger tips.
7. Apply warmth to the lower abdomen.
8. Apply pressure at the side of the urinary meatus with a finger.

### **Catheterization**

Some patients have a urination problem that cannot be resolved by nursing measures and is managed by the use of a catheter. Catheters are made from rubber or metal or plastic. A catheter is a tube with an opening at each end and one end having a smooth, blunt point. They are made in different sizes with diameters suitable for infants to adults.

There are two types of catheters — **straight (plain) catheters** and **retention catheters**. A straight catheter is a smooth, plain tube with nothing for holding it in place. It is used to obtain a sterile urine specimen, instill medication into the bladder, relieve a minor retention problem or any other reason when the catheter is not required to remain in place. A retention catheter has some means of holding it in the bladder. It is used when continuous urinary drainage is anticipated to be needed for an extended period of time. A number of different styles of retention catheters have been

developed. The one most frequently used is called a **Foley catheter**. A small, thin rubber bag surrounds the catheter near the tip. After the catheter has been inserted, the bag is inflated with sterile water to form a balloon in the bladder. Conditions requiring the use of a retention catheter include obstruction of the urethra and other urinary tract problems, surgery or disease requiring the bladder to be kept empty, studies of urinary function, incontinence and restoration of bladder control.

The catheterization procedure and the reason for it are explained to the patient and questions answered before taking the equipment to the bedside. No patient likes to have it done. There is a fear of pain and embarrassment because of the intrusion of privacy. Reassurance, encouragement and provision of privacy are a comfort to the patient.

Very careful sterile technique is used in the catheterization procedure to prevent introduction of bacteria into the bladder. An infection in the bladder can spread to the kidneys causing a serious and even life-threatening problem.

Most hospitals provide sterile catheterization trays that contain most of the equipment needed for doing a catheterization. Catheters may be sterilized separately. Disposable catheterization trays are prepared commercially. A nurse should know all the articles on the tray before taking it to the bedside in order to supplement items. Articles used for doing a catheterization are :

1. A sterile catheter — straight or retention
2. Sterile hole towel
3. Sterile cotton balls
4. Sterile thumb forceps
5. Sterile gloves
6. Sterile basin for receiving the urine



7. Cleansing solution
8. Water-soluble lubricant
9. Container or paper for waste
10. Sterile syringe and sterile water for Foley catheter (if used)
11. Drainage tubing and a collecting bottle or bag (if a retention catheter is used)
12. Specimen bottle and label if required

### **Catheterization of a female patient**

The tray is taken to the bedside. Privacy is provided by curtains or screens. The dorsal recumbent position with the knees flexed and separated is the most suitable position for the female. The knees, legs and abdomen of the patient are covered by a sheet with only the perineum exposed. A good light is directed to the area. The tray is placed at the foot of the bed near enough to be easily reached while doing the catheterization.

The tray is opened in a manner that permits the inside of the wrapper to remain a sterile area. The nurse puts on the rubber gloves. The sterile hole towel is put in position between the thighs exposing the vulva. Make the rest of the sterile equipment ready. Pour the cleansing solution on the cotton balls. Apply the lubricant to the catheter. (If the cleansing solution and the lubricant are in unsterile containers, they are put on the cotton balls and catheter before putting on the sterile gloves.) Fill the syringe with sterile water if it is a Foley catheter.

With the left hand separate the labia to expose the meatus. The left hand is now contaminated and must not be removed to handle the sterile equipment. Use the forceps to pick up one of the moistened cotton balls. Hold it firmly and clean down the center of the perineum over the meatus. Discard the cotton ball. With a fresh cotton ball, cleanse downward on one side of the meatus.

Use a third cotton ball to cleanse the other side. All the cleansing should be from anterior to posterior and only one stroke with each cotton ball. The cleansing is to remove secretions and bacteria to help prevent infections. (Some nursing leaders recommend cleansing the sides of the area first and the center portion last. This is acceptable. All staff in an institution should follow the pattern approved by its nursing leaders.) Most important in the cleansing technique is to clean from front to back and use each cotton ball for only one stroke. It is important that once the meatus is exposed with the left hand the labia should not be released until the catheter is introduced into the urethra. The basin for receiving the urine is placed between the legs near the perineum. Pick up the lubricated catheter about 8 or 10 cm (3 to 4 inches) from the tip. Insert it smoothly through the meatus about 5 to 8 cm (2 to 3 inches). The flow of urine indicates that the catheter is in the bladder. If the urethra seems blocked, it may be due to tightness of the muscles. Deep breathing by the patient to relax the muscles and slightly rotating the catheter will usually overcome the problem. If it does not, the problem is reported to the doctor.

A urine specimen is collected if required and the remaining urine is collected in the basin. If a straight catheter has been used, it is pinched to close it and removed from the bladder. The container of urine and the equipment is removed from the bed, the patient made comfortable, then the urine and equipment taken to the service area to be cared for as required.

The procedure is recorded on the patient's chart stating the time it was done, the amount of urine obtained, the characteristics of the urine and if a specimen was sent to the lab.

If a Foley catheter is used, it must be held in place until the balloon is inflated. It can be inflated

while the urine is flowing. Use the amount of sterile water for inflation that is indicated for the catheter. It is usually 5 to 10 ml. After the catheter is inflated, pull on it gently to make sure it is securely in place.

The catheter is connected to the drainage tubing with care to prevent contamination of the end of the catheter, tubing and adapter. After connecting it, the catheter is taped to the thigh of a female patient to prevent tension on it. The tubing should come over the thigh rather than under it as the pressure of the leg on it would block the flow of urine. The bottle or bag is attached to the side of the bed so it is well below the level of the bladder, but not touching the floor. Excess tubing is coiled on the bed in an area where the patient will not lay on it. The tubing is secured to the side of the bed with a clamp or a rubber band wrapped around it and attached to the bed with a safety pin.

### **Catheterization of a male patient**

It is preferable for a male nurse to catheterize a male patient. All the same principles of privacy and sterile technique are to be followed. The penis is held firmly at a right angle to the body. The head of the penis is cleansed with a circular movement beginning at the meatus. The lubricated catheter is inserted 20 to 23 cm (8 to 9 inches) in the adult male because of the length of the urethra. If a retention catheter is used, it is taped to the abdomen in a manner that prevents pulling on the catheter or the penis.

### **Nursing Care of a Patient with a Retention Catheter**

Care of a patient with a retention catheter is directed toward preventing infection of the bladder and keeping the urinary system functioning well. Routine nursing care to be carried out includes :

1. Maintain an intake-output record to know the functioning of both the catheter and the kidneys.



2. Observe the tubing frequently. Keep it free of twisting, pressure or a loop falling below the level of the urine collecting container.
3. Empty the urine container and record the amount at least once during every shift and more often if necessary. The urine should never be allowed to completely fill the container.
4. Encourage fluid intake to 2000 ml or more daily unless the patient has a medical problem that limits intake.
5. The tubing must be clamped if at any time the collecting container is raised above the level of the bladder.
6. Sterile technique is to be used in collecting a urine specimen from a Foley catheter. Urine that has been collecting in the container for several hours should not be used as a specimen.
7. Wash the genital area and around the catheter with soap and water twice daily. In some institutions, the area is also cleansed with a non-irritating antibacterial solution.
8. When the patient is out of bed, attach the tubing and container to the patient's clothing or place it in a bag that can be carried. The patient is encouraged to be up moving about or in a chair as much as possible unless contraindicated. The container must always be kept below the level of the patient's bladder and the tubing.

### **Removal of a Foley Catheter**

The patient will be pleased to have the catheter removed, but will naturally feel apprehension that it

will be painful and wondering if he will be able to urinate normally. Reassurance is given that removal of the catheter does not cause pain and that nursing measures will be used to help the patient void normally.

To remove the catheter, a syringe and a small basin or a paper is needed. Privacy is provided for the patient. The syringe is used to withdraw the fluid inflating the balloon. It is inserted into the balloon opening and the fluid aspirated. The catheter is then pinched and pulled smoothly from the bladder. It is raised to allow the urine in it and in the tubing to drain into the collecting container. The catheter is disconnected from the tubing and placed in the basin or wrapped in the paper. The patient is made comfortable, then all the equipment is taken to the service area. The urine is measured and emptied. All equipment is cared for as required. The time of removal is recorded on the patient's chart along with the amount and character of the urine.

A slight burning sensation may be present at the time of urination for a few times after removal of the catheter. The patient is reassured that it is expected. The need to void may be felt very frequently for a short period. If the burning and frequency persist, it is reported as it could be an indication of a urinary tract infection.

### **Collection of Urine Specimens**

Urine tests have been developed that provide valuable information about the functioning of the body and about problems in its working. Some tests require the urine to be sterile, others do not. All specimens are collected according to the requirements of the tests to be done. Urine specimens should be tested or sent to the laboratory as soon as collected. Urine, at room temperature, quickly begins to deteriorate with chemical changes taking place in it. This may cause an incorrect test result and the information cause a wrong diagnosis to be made or an improper treatment given. Sometimes



a urine specimen can be kept in a refrigerator or in a basin of ice to delay the deterioration until it can be sent to the laboratory. 30 ml or more is usually collected for a specimen.

A label is attached to the specimen bottle on which the patient's name, room number and the date is written. Some hospitals require additional information on the label, other hospitals have a separate requisition form which is filled in and sent along with the specimen.

### **Voided specimen**

When the urine does not need to be sterile for the tests that are to be done, a voided specimen is obtained. A bed patient may void into a bedpan or urinal and the nurse pours a sufficient amount of urine into a specimen bottle. An ambulatory patient may be given the container and asked to go to the toilet to pass urine directly into the specimen bottle, or he may be given a basin or bedpan into which to void. The nurse then transfers the urine into the specimen container, labels it, sends it to the laboratory and records it on the patient's chart.

### **Clean-catch (mid-stream) specimen**

This is a method to obtain a sterile urine specimen for a culture and sensitivity test without doing a catheterization. The important points in doing it are to thoroughly cleanse the area around the urinary meatus of bacteria, void a small amount of urine and discard, then collect the next urine in a sterile specimen bottle. The ambulatory patient can be given the materials and instructions for collecting his/her own specimen.

The materials needed for collecting the specimen are cotton balls, liquid soap or other cleansing agent, a waste container and sterile specimen container and cover. Provision is made for the equipment to be placed within easy reach of the toilet. The cover is



removed from the specimen container and great care taken to prevent anything from touching the inside of the bottle or cover. The cotton balls are moistened with the cleansing solution and the waste container (it may be a paper) is placed conveniently.

The following instructions are given to the patient. While standing over the toilet, the female patient separates the labia with the thumb and index finger of the left hand. (The index finger and middle finger may be used if it is easier.) With the right hand, take a moistened cotton ball and clean down the center of the vulva from the front to the back. Discard it in the waste container. With a fresh cotton ball, clean one side of the vulva from front to back. Discard the cotton ball. Use another fresh cotton ball to clean the other side of the vulva. The fingers of the left hand are not to be removed until the specimen is obtained. Void a small amount of urine into the toilet, then hold the specimen bottle under the urine stream until it contains 30 ml or more of urine. The rim of the bottle must not touch the body. Replace the cover on the bottle and clean the outside.

The patient informs the nurse that the specimen has been obtained. The nurse is responsible to label it, send it to the laboratory, record it on the patient's chart and care for the materials used.

If it is a bed patient, the nurse will place the patient on a bedpan, separate the labia, cleanse the vulva and hold the labia separated while the patient voids a small amount in the bedpan. Gloves may be worn. The nurse may use the specimen bottle or a sterile basin to catch the mid-stream portion of urine. Care is necessary that there is no contamination of the specimen.

A male patient will need the same materials as a female patient. If he collects the specimen himself, he

will need to be instructed to clean the head of the penis around the meatus with a circular movement, void a small amount of urine into the toilet, then collect the mid-stream portion of urine in the sterile specimen bottle. When carried out with care and good technique, it is a fully satisfactory method of obtaining urine for culture and sensitivity tests. It eliminates the possibility of infection from catheterization. It does require that the patient's physical condition makes co-operation possible. Catheterization is necessary in some cases to obtain a sterile specimen.

### **A 24-hour specimen**

It is necessary to have all the urine passed in a 24 hour period in order to do certain tests. A large container, with a preservative added, is obtained from the laboratory. A label is prepared with the patient's name, room or bed number, the time and date of starting the collection and the time and date it is to be terminated. The label is firmly attached to the specimen container. A sign indicating that a 24 hour specimen is being collected should be attached to the bed to keep all family members and staff aware of it. All should know where the container is being kept, whether it is in the patient's room or in the service area.

The patient voids at the beginning of the test with the urine being discarded. From then onward, all the urine is saved in the specified container. At the end of the 24 hours, the patient is again asked to empty the bladder and the urine is added to that already in the container. The container, along with the request form, is sent to the laboratory. The sign is removed from the bed. A notation is made in the patient's chart at the beginning of the collection and again when it is completed and the total amount of the specimen sent to the laboratory is recorded.

## INTESTINAL ELIMINATION

Waste from the intestines is composed mainly of indigestible food substances, secretions from the digestive tract, dead tissue cells, bacteria and water to keep it soft. The waste material is called **faeces**, **excreta** or **stool** plus terms people have devised for family use. Terms used to describe the act of expelling waste from the digestive tract include **defecation**, **elimination** and **bowel movement**.

### **Digestive Tract : Anatomy and Formation of Feces**

The formation of fecal material and its passage from the body are natural functions resulting from the intake and digestion of food. Food taken into the mouth is chewed and broken into small particles that are swallowed and go into the stomach. In the stomach, the food is mixed with stomach secretions by peristaltic action and further liquified before passing into the intestines.

The first part is the small intestine which has three parts : the duodenum which is attached to the stomach, the jejunum, and the ileum which is joined to the large intestine. The large intestine or colon has a number of sections — the caecum, ascending colon, transverse colon, descending colon, sigmoid colon, rectum and the anus which is the opening to the outside of the body.

The liquified food (chyme) passes from the stomach to the small intestines where it is mixed with still more digestive juices containing enzymes that react chemically with the food to separate the various food nutrients. The nutrients are absorbed into the blood through the many blood vessels of the small intestine.

The remaining indigestible fibrous material from the food along with water passes through the ileo-caecal valve into the large intestines. A large number of bacteria are present in the colon. They act upon the fibrous



waste causing further breakdown and the formation of vitamins K, B<sub>1</sub> and B<sub>12</sub>. The vitamins, electrolytes and water are absorbed from the colon. The remaining material continues moving through the colon until it reaches the rectum, usually as a soft, solid mass. It remains in the rectum until enough is present to produce pressure on the sphincter muscle of the anus causing the urge to defecate.

### **Terminology related to elimination of faeces**

**Bowel :** The intestine.

**Constipation :** It is infrequent or difficult evacuation of hard faeces.

**Colonic irrigation :** It is a thorough flushing of the large intestine.

**Defaecation :** It is the act of expelling fecal material from the rectum.

**Diarrhoea :** It is the abnormal frequency and liquidity of faeces.

**Elimination :** It is the expulsion of the wastes from the body by way of lungs, skin, rectum and urinary bladder.

**Enema (Clysis) :** It is the introduction of the fluid into the rectum.

**Faeces :** The content of the large bowel.

**Flatulence (Tympanites or meteorism) :** It is the condition of having flatus or gas in the gastro-intestinal tract.

**Incontinence :** It is the inability to control the sphincter which guards the rectum or bladder.

**Melaena :** Refers to stools that are very dark or black because of the presence of blood.

**Suppository :** It is a cone shaped fusible medicated mass to be introduced into the rectum.

**Straining of stool :** It is a process in which the stool is strained through a sieve in order to detect the presence of a parasitel object e.g., a patient who takes the tapeworm treatment should have his stool strained to detect the head of the tapeworm to ensure its expulsion. The patients who have swallowed small objects may have their stool strained to ensure its expulsion.

**Straining at stool :** Usually happens when a person is constipated. It is the force used in the expulsion of the stool.

### **Characteristics of Normal Feces**

Normally feces is a mixture of water and solids forming a soft, brown mass. The color of feces is changed by certain medications. Preparations containing iron make the feces a black color. The odor of feces is the result of bacterial action on the food that was eaten. Feces should be observed for consistency, color, odor, the presence of unusual matter, the number of stools passed in 24 hours and any accompanying pain or straining.

### **Abnormalities of Feces**

Abnormal substances most often noted in feces include blood, mucus, pus and parasites. Blood from high in the digestive tract causes the feces to be a black color and is termed melaena. It can be confused with the color change caused by iron medications. A laboratory test will clear questions of the problem. Blood from the colon, rectum and anus will be a bright red. If there is blood in the stool, or even a suspicion of it, it must be reported to the doctor. He may wish to see the specimen. It is always best to save the entire specimen for him to examine. The blood may be due to a very serious problem or to a minor problem.

Other color changes may be observed. Though the normal color is brown, it will vary according to the food eaten. Babies taking only milk or adults receiving special feedings of a milk formula, will have a dark yellow stool. A very light or clay color is due to the absence of bile and may indicate obstruction in the bile ducts. Undigested fat gives a light tan color to the feces. Starvation in babies cause green stools (hunger stools)

A small amount of mucus is normal in feces and gives it the smooth, shiny appearance. However, large amounts of mucus especially in loose or watery stools indicate irritation or inflammation of the intestinal lining. The presence of pus means an inflamed ulcer is draining into the intestinal tract.

Parasites can be seen in feces, especially ascaris (roundworms), since they are 20 to 25 cm (8 to 10 inches) in length or longer. Sometimes hookworms or threadworms are seen, but they are often too small to be clearly identified. Laboratory examination shows worms are not present. Amoeba and tapeworm segments are seen as flat, white, moving objects under the microscope. If either is suspected, the specimen is kept warm and the entire specimen sent to the laboratory as quickly as possible for identification.

### **Intestinal Function**

Intestinal elimination is influenced by 1) the type of food eaten, 2) the amount of fluids taken, 3) emotional states, 4) patterns or habits of living and 5) exercise. The fibrous material found in fruits, vegetables and whole grains is needed in the diet. The fiber is undigestible, but forms the basis of the feces to which other waste is added. It improves the movement of waste through the intestinal tract and stimulates



the rectum to expel it before the colon absorbs so much water that it becomes a dry, hard mass that is difficult to expel.

A fluid intake above the amount required for other body functions is necessary to keep the stool soft. In hot climates the fluid intake must often be greatly increased because of the large amount of fluid lost through perspiration.

Most mental health specialists believe intestinal elimination and emotional attitudes are closely related. Emotions are associated with an increase in peristalsis (hyperactivity) or a decrease in peristalsis (hypoactivity). Anger, resentment, hostility and anxiety are associated with hyperactivity of the intestinal tract which produces loose stools and diarrhoea. Feelings of fear and depression are related to hypoactivity leading to constipation.

The urge to defecate is associated with eating food. This is due to the co-ordinated action of all the sphincter muscles of the gastro-intestinal system. Because there is voluntary control of the muscles used in defecation, the urge can be suppressed. If it is delayed for a prolonged period of time, the feces becomes dry due to water absorption from it. The urge to defecate should not be ignored or delayed. Children and adults tend to delay elimination when there is an exciting, interesting activity claiming their attention or because of the pressure of work. Chronic constipation results from the habit of delaying defecation. Defecation is often established for a certain time each day. It is part of the early morning routine of many people. Defecation may occur once or several times daily, or it may be once every two or three days. It is considered normal as long as the feces is soft and causes no straining or discomfort during elimination.

Exercise is important in maintaining good elimination. Ambulatory patients have fewer elimination problems

than complete bed patients. It is one of the reasons patients are encouraged to walk and move about as much as possible.

## PROBLEMS OF ELIMINATION

### Hyperactivity

A change in the normal peristaltic movements of the intestinal tract produces elimination problems. Hyperactivity is caused by irritation to the intestines. Intestinal irritation from microorganisms (or their toxins) and emotions are the two most frequent causes of peristaltic hyperactivity leading to diarrhoea. The increased action moves the chyme along the tract so quickly that food nutrients and water are not fully absorbed. The result is the elimination of liquid or semiliquid stools referred to as diarrhea. Dehydration develops quickly when there is diarrhea because of the excessive fluid loss. The loss of nutrients and electrolytes affects the organs and muscles causing weakness.

In each case, the cause must be determined and appropriate treatment given. Liquid stools may contain a substance that irritates the anus and surrounding skin making elimination very uncomfortable. A patient will sometimes have an urge to defecate, but pass nothing when trying. This is called **tenesmus**. The anal area and buttocks must be washed clean after each defecation and suitable, protective medication applied.

### Hypoactivity

A hypoactive intestine is one with decreased peristalsis and results in constipation. In hypoactivity the chyme moves so slowly through the intestinal tract that too much water is absorbed, the feces becomes hard with defecation, irregular and difficult. Constipation may be caused by 1) failing to heed the urge to defecate, 2) lack of fibrous foods in the diet, 3) excessive use of laxatives, 4) use of opiate drugs, alcohol or seda-



tives, 5) insufficient fluids, 6) tumors or certain diseases, 7) inadequate exercise and 8) emotional problems.

Finding the cause of constipation and helping the patient overcome the problem is often very difficult, especially when living patterns and habits must be changed. However, it is very rewarding when accomplished. There are many times that a person who has had normal elimination develops a defecation problem while in the hospital. Treatment is through the use of laxative medications or by giving an enema. Neither method should be routinely used because a patient may develop a dependency for either treatment. However, both medications and enemas have a place and are given as ordered on an individual basis.

## TYPES OF ENEMAS

### **Cleansing enema**

The type of enema most often given is a cleansing enema. It is given for the purpose of removing feces from the rectum and colon. The cleansing action is partially due to the amount of fluid used — usually 500 to 1000 ml in an adult. Less would be used for a child, depending on the size. The fluid should be retained as long as possible to soften the feces. The large volume of fluid added to the colon contents stimulates peristalsis and produces pressure on the anal sphincter which causes the urge to defecate.

Solutions used for a cleansing enema are tap water, a normal saline solution and infrequently, a soap suds solution. Tap water is probably the most commonly used solution for a cleansing enema. It does not irritate the mucosa of the colon. Its action is due to the amount of fluid given. If tap water enemas are repeated frequently, an overloading of the circulatory system can result because water is hypotonic and a certain amount



is absorbed into the blood vessels from the colon. It becomes a problem mainly in elderly patients, very debilitated patients or in small children.

A normal saline solution is preferred for those who need frequent enemas. It is usually available in the hospital pharmacy. If necessary, it can be prepared by adding one teaspoon (4 gm) of salt to each 500 ml of water.

In the past, a soapsuds solution was widely favored for a cleansing enema. The soap irritates the colon and produces a very strong peristalsis. Many doctors disapprove its use because of its irritating effect on the colon. The irritating effect of the soap on the colon has been described as equal to the irritation of the conjunctiva of the eye by soap. A soapsuds enema should not be given unless specifically ordered by a doctor and a very mild soap is available for making the solution. Soap containing even a small amount of phenol must never be used as it will severely irritate or burn the colon.

### **Technique of giving a cleansing enema**

The performance of nursing procedures become so familiar to the staff that there is a tendency to forget that a simple procedure may be new and frightening to a patient. It is true of an enema. For many patients, the experience or even the thought of an enema is unknown until they are hospitalized. There may be much apprehension about what the solution will do to the body and how much pain will result. Explanation is given using words and terms the patient will understand to calm his fears and know how to co-operate during the procedure. A relaxed patient makes the procedure easier and aids in the effectiveness of the enema.

Sterile equipment is not required for administering an enema. Clean equipment is collected and arranged on a tray. Items needed will be :

1. A fluid container with tubing and clamp or stop cock.
2. A rectal tube of a suitable size.
3. The enema solution.
4. Lubricant
5. Bedpan.
6. Waterproof protection for the bed.
7. Washcloth and towel

The solution to be given is warmed to  $37.8^{\circ}$  to  $40.6^{\circ}\text{C}$  ( $100^{\circ}$  to  $105^{\circ}\text{F}$ ). If a bath thermometer is not available, the temperature of the solution is tested by putting a few drops of it on the inner aspect of the wrist. It should feel warm, but not hot to the skin.

The enema tray is taken to the bedside. Privacy is arranged. It is preferred that the patient be on the left side in the Sim's position. It will allow the solution to go easily into the sigmoid and descending colon. (The patient may be on the right side or the back if his condition makes it necessary.) The rectal area is exposed and the waterproof protection placed under the patient's hips.

Remove air from the enema tubing by allowing fluid to flow through it, then clamp the tubing. Insert the lubricated rectal tube tip 5 to 7.5 cm (2 to 3 inches) in an adult. If the anal sphincter is tight, it will relax if the patient breathes through his mouth.

Hold the tube in place with one hand and with the other hand raise the container of fluid about 45 cm (18 inches) above the anal level. The fluid should flow gently into the rectum. If the patient has discomfort, the container is lowered to decrease the pressure of the fluid and its rate of flow. Sometimes the flow of solution becomes blocked by fecal material at the

tip of the rectal tube. Raising the container briefly to increase pressure of the fluid will usually cause the feces to be dislodged and the solution to flow freely again. The container is then lowered to provide a gentle flow.

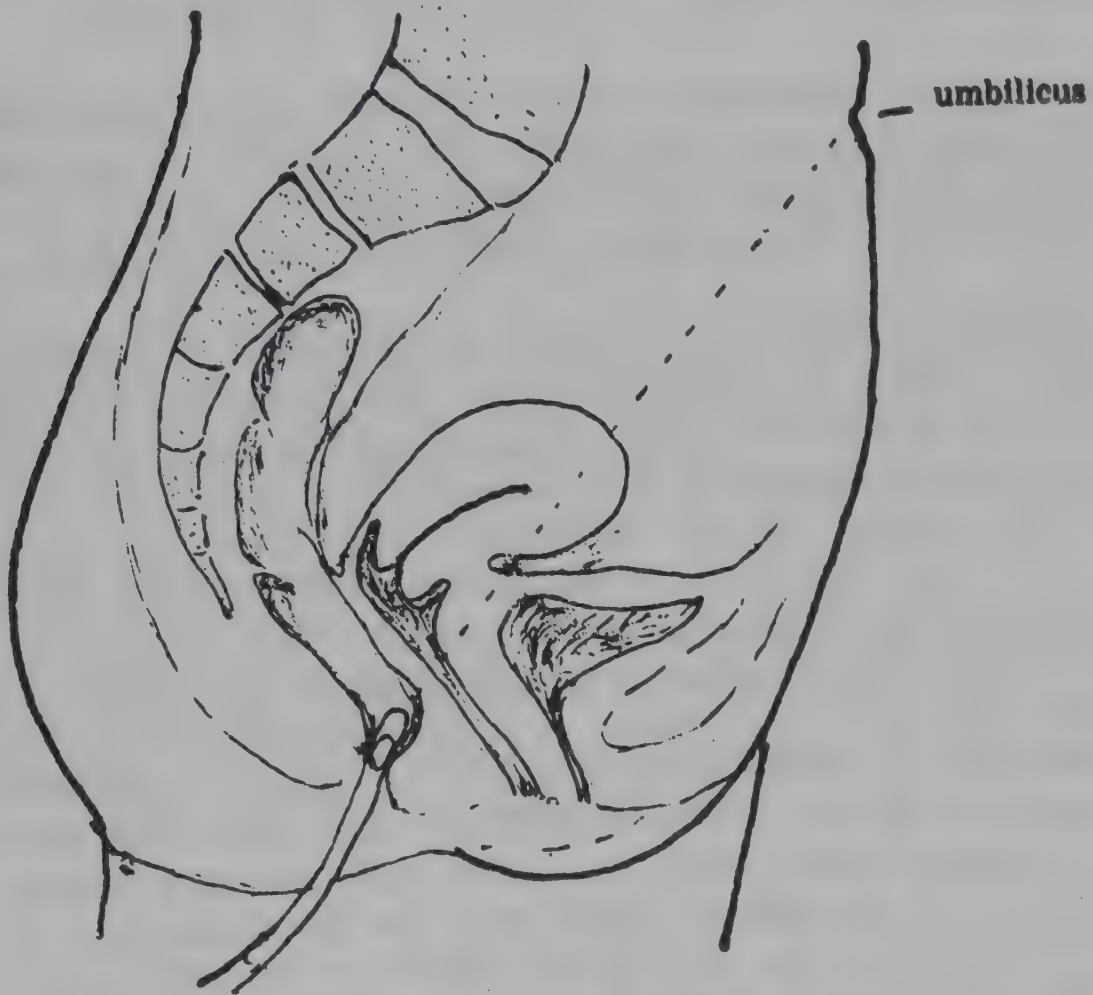


Fig. 7 — Insertion of Enema tube

**Note:** The inserted tube is directed at an angle toward the Umbilicus

When the desired amount of solution has been given, clamp the tubing and remove the rectal tube. Encourage the patient to hold the fluid as long as possible. If the patient can go to the toilet, assist him in going. Provide a bedpan to patients who cannot go to the toilet. Stay with or near the patient as required by his condition. Observe the patient for weakness, perspiration or pulse increase.



The patient, who uses the toilet, should be requested not to flush it. The nurse is to observe the bedpan or toilet for the amount, color and consistency of the feces. Assist the patient to clean the anal area if it is a problem for him. Straighten the bed and make the patient comfortable. Remove all equipment to the service area. Clean or dispose it off as indicated.

Record the procedure on the patient's chart including the type of enema, the kind and amount of solution given, the amount, color and consistency of the feces expelled and the patient's reaction to the procedure.

Cleansing enemas are prepared commercially in a plastic bottle with a pre-lubricated tip. Directions for use are printed on the container. Only about 120 ml of solution is required because it is a hypertonic solution. It acts in two ways; 1) by drawing water from the body tissues into the colon to soften and lubricate the feces and 2) by irritation of the colon wall to produce peristalsis. Defecation is usually delayed for some time with this type of enema. A hypertonic solution is not used for a dehydrated patient or when immediate emptying of the colon is desired. However, this type of enema is well liked by both patients and nurses because it is easy to give and the small amount of solution causes less abdominal distention and discomfort than a tap water or saline solution enema. Defecation from it is more normal.

### **Oil retention enema**

Sometimes a patient has not defecated for a number of days. Because water is constantly being absorbed from the fecal mass, it becomes increasingly dry and hard. For this problem, an oil-retention enema is often ordered to soften the feces. 90 to 100 ml of mineral oil is instilled into the patient's colon. A small rectal tube is inserted and a funnel or ascepto syringe barrel attached, the oil poured in and allowed to flow slowly into the

rectum by gravity. The patient should retain the oil for  $\frac{1}{2}$  to 1 hour after which a cleansing enema is given.

Commercially prepared oil enema sets are available. They are easy and simple to use. The directions are printed on the container.

### **Glycerine enema**

Glycerine is a hygroscopic substance. It draws water from the walls of the bowels. The stretching of the bowels due to this inflow of fluid causes the intestine to contract and leads to the evacuation of the bowel. Glycerine or glycerine and water about 15 to 30 ml. is given. Funnel and catheter or catheter and syringe may be used for its administration.

### **Other types of enemas**

- 1) Anthelmintic enema may be used to assist in removing parasitic worms from the colon.
- 2) An astringent enema may be given to contract tissues and to stop haemorrhage.
- 3) An emolient enema may be given to coat the mucous membrane of the colon and to soothe irritated tissue.
- 4) Sedative enema may be given to induce sleep.
- 5) A carminative enema may be given to expel flatus.

### **The rectal suppository**

A rectal suppository is a small conical sphere that is designed to slip easily through the anal canal into the rectum. It melts at body temperature. There are several varieties of suppositories available eg. glycerine, dulcolax. Some act as local irritant which stimulates secretion by the mucosa, while others act directly on the nerve endings and stimulate peristalsis. The Suppositories are to be kept in the refrigerator because they

melt at room temperature and insertion becomes difficult.

Before introducing suppositories, its function and the procedure is explained to the patient. The patient lies in the same position as for an enema. With a gloved hand the suppository is inserted one finger length, approximately 7.5 to 10 cm. into the rectum in adults, and half that distance in children. Once it has passed the external sphincter, advance it beyond the internal sphincter, pushing it with the index finger. The suppository is positioned to the side of the rectum against the mucosa, rather than in the faecal matter, because the intended action of the medication is on the intestinal wall. If the suppository is for the expulsion of rectal contents, the patient should try to retain the suppository for at least 20 minutes. The suppository administered for other purposes is retained indefinitely.

### **Return-flow enema**

Some patients, especially in the post-operative period have a problem from decreased peristalsis and the accumulation of gas in the intestinal tract. A return-flow enema is given to remove the gas and stimulate peristalsis. 100 to 200 ml of warm tap water or normal saline is allowed to flow into the colon. The fluid container is then lowered below the level of the rectum to siphon back the fluid which also brings out the gas. Instilling, then siphoning the fluid is repeated until flatus no longer returns with the fluid.

Frequent use of tap water for this procedure may cause a depletion of electrolytes while repeated use of normal saline may result in the absorption of too much sodium. It is advisable to alternate giving the two solutions when it is necessary to repeat the procedure several times in one day. It is recommended that frequent position changing and ambulation be used whenever possible to overcome discomfort from abdominal gas.



## Flatus Tube

A rectal tube may be inserted and left taped in position for removing flatus from the colon. This method is effective in many cases when there is discomfort from accumulated gas. It is not as tiring to the patient as giving a return-flow enema.

Articles required are 1) a rectal tube, 2) lubricant, 3) adhesive tape and 4) a small container. The patient is provided privacy, turned to one side (preferably) and the lubricated tube inserted 5 to 7.5 cm (2 to 3 inches). It is taped in place and the distal end placed in a small bottle, basin or plastic container containing water situated near the buttocks. Sometimes a small amount of liquid feces is expelled through the rectal tube along with the flatus. Best result is obtained by changing the position of the patient and the tube.

The flatus tube may be left in place for several hours. The time of insertion and whether gas is expelled is recorded in the patient's chart. Later, after removal, the time of removal, the patient's comments of the amount of gas expelled and any change in the softness of the patient's abdomen are recorded in the chart.

## Collecting a Stool Specimen

Articles needed for collecting a stool specimen are a specimen container, with a cover, two tongue blades or swab sticks, paper for waste and a bedpan.

Inform an ambulatory patient that the specimen is wanted and that he must defecate into a bedpan. He may use it in the bed or in the toilet area and inform the nurse when it is ready. A bed patient should be told that a specimen is requested so a family member does not discard the feces.

The bedpan containing the specimen is taken to the service area. With the tongue blades or swab sticks, transfer a sufficiently large amount of feces to the specimen container. Place the cover firmly on the container. Wrap the tongue blades in the paper and discard. Empty the bedpan, clean and return it to its place. Send the laboratory request form and the labelled specimen to the laboratory. Record the character of the feces and that the specimen was sent to the laboratory on the patient's chart.

### **Colonic irrigation (enteroclysis)**

Colonic irrigation (enteroclysis) refers to the treatment of washing out the colon with large quantities of a solution.

#### **Purpose :**

1. To cleanse the colon of faeces, gas, excess mucus, barium etc., pre-operatively and before diagnostic procedure.
2. To remove toxic agents that may be present in the colon
3. To reduce the temperature in hyperpyrexia and heat stroke
4. To relieve inflammation and pain of pelvic organs.

#### **Solutions used**

1. Plain water
2. Normal Saline
3. Sodium bicarbonate solution 1 to 2 percent
4. Cold water

#### **Temperature**

For cleansing 40° C

For supplying heat 43° C to 46° C

For reducing temperature 27° C to 32° C

## Methods used

Different institutions adopt different methods for colonic irrigation. The common methods used are :

- 1) Funnel and rectal tube method
- 2) Y. connection and rectal tube method
- 3) A catheter and rectal tube introduced together for continuous flow

## General Instructions

Explain the whole procedure to the patient to win his confidence and co-operation.

A cleansing enema should be given one hour before the colon irrigation is started, so that the rectum will be free of faecal matter. The bladder should be emptied before starting the colonic irrigation. Prevent air from entering the intestines by expelling air from the tube before starting and not allowing the funnel and tubing to be completely empty.

The temperature of the solution to be kept constant throughout the irrigation.

Use a smooth and flexible rectal tube and lubricate it well to prevent damage to the rectal mucosa.

Be attentive to the patients reaction and should not ignore any discomfort or complaints however small they may be during the procedure. Make sure that the return flow is not blocked.

Allow only 200 to 300 ml. of fluid to run into the rectum at a time. Then it should be drained out completely before introducing the fluid again.

Regulate the flow of fluid. Stop the procedure temporarily if the patient complains of pain. The treatment



should be stopped immediately if there is any sign of fatigue and collapse.

After care of the patient and equipment is the same as that for a cleansing enema.

Record the amount of solution used and the result of the treatment.

A hot drink will help to refresh the patient.

### **Summary**

Good elimination is necessary to good health. It is, therefore, essential to use all available knowledge and nursing methods to promote normal functioning of the urinary and intestinal tracts. Elimination is most satisfactory when the patient can assume the position normally used. Some people can use a bedpan or urinal with ease while lying in bed; others find it very difficult to do so. All nursing measures to induce voiding should be tried before considering catheterization because it is always possible to introduce infection into the urinary tract during the procedure.

Constipation is most common defecation problem. Diet, emotions, living habits and exercise are all important in maintaining good bowel action. They are often disrupted by an illness with constipation then developing. Attention to diet, emotions and exercise are a part of nursing care. Additional help in the form of an enema is indicated in certain situations. Enemas can become a habit. Therefore, all means of encouraging normal defecation are tried before resorting to regular, repeated enemas.

### **Additional Study Topics**

1. The formation of renal calculi.
2. Causes and prevention of urinary bladder infections.

3. Urinary drainage systems.
4. The effect of emotions on the intestinal tract.
5. Bladder and bowel retraining.

### **Learning Activities**

1. Make a list of the patients in a nursing unit with a urination or defecation problem. Note the cause of each problem, the medical treatment and the nursing measures being used to correct each problem.
2. Select two patients with a urinary problem. Evaluate their fluid intake and output. Are any changes in intake needed?
3. Make a model of plastic, foam rubber or other material to use in demonstrating how to obtain a clean-catch urine specimen.
4. Demonstrate the technique of giving a cleansing enema.
5. Prepare a lesson outline of ways to maintain good intestinal elimination.

## **CHAPTER 11**

# **EXERCISE AND AMBULATION FOR THE PATIENT**

### **CHAPTER CONTENTS**

#### **Exercise for the patient**

**Benefits of exercise**

**Types of exercise**

**Problems from inactivity**

**Range-of-motion exercises**

**Types of movement**

**Sequence of exercises**

**Neck**

**Shoulder and elbow**

**Wrist**

**Fingers and thumb**

**Hip and knee**

**Ankle and toes**

#### **Ambulation**

**Effects of prolonged bedrest**

**Benefits of walking**

**Assisting a patient to walk**

**Walking with an aid**

##### **A cane**

**Indications for use**

**Determining the length of a cane**

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## **Crutches**

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**Rising from a sitting position**

**Gaits used in crutch walking**

**Three-point gait**

**Four-point gait**

**Two-point gait**

**Returning to a sitting position**

**Going up and down steps**

## **LEARNING OBJECTIVES**

1. Necessity of keeping the joints of bed patients functioning to the fullest possible extent.
2. A systematic method of exercising all joints through their full range of movement.
3. Assisting a patient to walk.
4. Determining the length of a cane and teaching the technique of using one.
5. Demonstrating and teaching the use of a walker.
6. Measuring and adjusting crutches to a patient.
7. The techniques of rising, sitting and going up and down steps with crutches.
8. Demonstrating and assisting patients with the two-point, three-point and four-point crutch gaits.

# EXERCISE AND AMBULATION FOR THE PATIENT

## Exercise

The body is designed for movement by having joints and muscles. All body parts function at their best when there is sufficient activity. Exercise improves the tone and elasticity of muscles. It helps maintain calcium retention in the bones for strength and hardness. Blood pressure and circulation are aided by activity and waste elimination is improved.

Movement accomplished by a person without help is called **active exercise**. Movement that is done by someone else is **passive exercise**. Active exercise is always preferred for maximum benefit to the patient.

Whenever possible, surgical and medical patients are encouraged to walk and do other types of activity. Some patients cannot be out of bed due to the nature of their illness, injury or surgery. Persons who have paralysis or are unconscious may not be able to move at all. It has been found that a joint begins to become stiff in 24 hours if it is not moved. If the joint is left immobile for a longer period, the muscles and tendons become affected. The flexor muscles tighten and hold the joint in a flexed position. It is a painful position for the joint and limits movement. The flexed position due to the contraction of a flexor muscle is called a **contracture**. It can become a permanent contracture in less than three weeks.

Contractures are prevented by movement and exercise of the joints. If a patient is unable to move, someone else by passive exercise must move the joints. Exercises that provide all the movements that are possible for each joint are called **range-of-motion (ROM)** exercises. They should be done four or five times daily for helpless and immobile patients to maintain full joint

flexibility. Physiotherapists are available in many hospitals to do the exercises. However, they are usually unable to do them more than once a day and, often, can care only for those patients who are able to go to their department. It is increasingly being accepted as a nursing responsibility to give range-of-motion exercises to all who need them as a part of their general nursing care.

Movements that are carried out in doing range-of-motion exercises are :

1. Flexion — decreasing the angle between two parts.
2. Extension — increasing the angle between two parts.
3. Abduction — moving a part away from the body's midline.
4. Adduction — moving a part toward the body's midline.
5. Circumduction — Moving a part in a circular movement.
6. Rotation — moving around a fixed point or axis.
7. Supination — an upward position of the palm of the hand or the sole of the foot (also called dorsiflexion of the foot).
8. Pronation — a downward position of the palm of the hand or the sole of the foot (also called plantar flexion of the foot).

Range-of-motion exercises begin at the neck and move down the body. Each body part is moved to stretch the muscles and keep the joint flexible, but never to the point of causing pain. Support the extremities, when exercising them, by placing the hands under the



limb, allowing it to rest on the hands. A joint is never grasped directly. Each exercise is repeated six to eight times during a procedure. The patient is encouraged to carry out as much of the movement as he can for each joint. After each movement, return the part to its correct anatomical position. In some cases, two joints are exercised at the same time.

The exercises for each part of the body are :

### Neck

Support the head by placing a hand on each side. Flexion — bring the head forward until the chin touches the chest.

Extension — elevate the chin.

Rotation — turn the head to the right, then to the left.

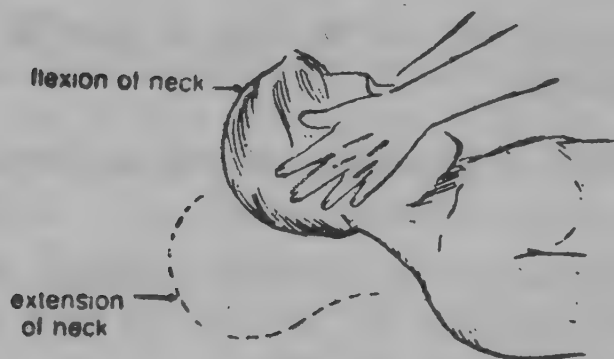
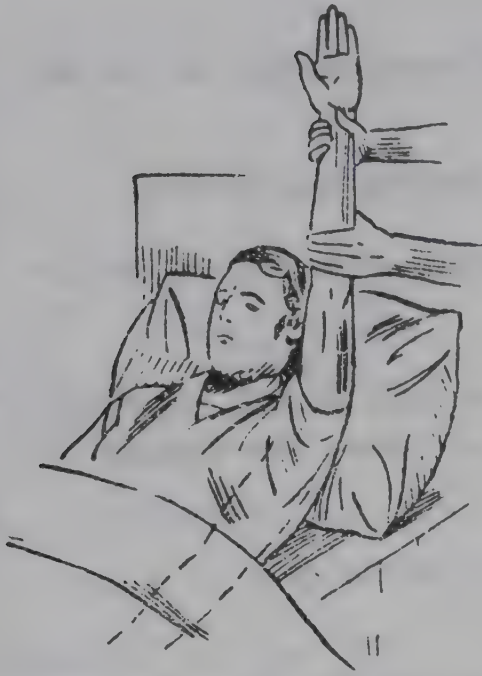


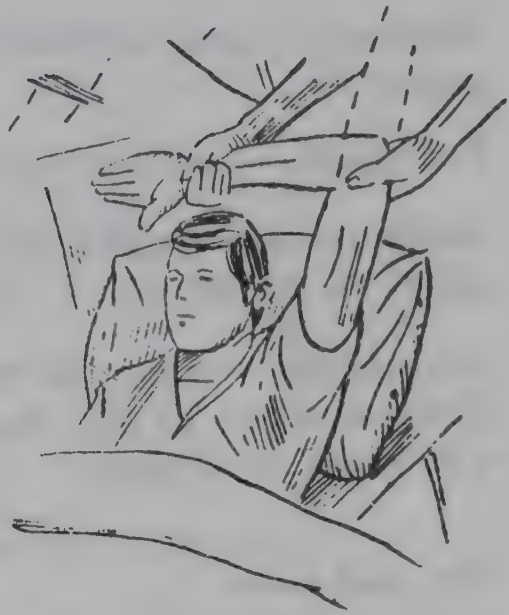
Fig. 8 A — Flex and extend the neck

### Shoulder and elbow

Extension and flexion — hold the arm just below the elbow and at the wrist. Lift the arm up straight, then bend the elbow and move the arm over the patient's head.



Extension of shoulder and elbow



Flexion of elbow

Fig. 8 B— Shoulder and Elbow

**Internal rotation of shoulder** — Hold the patient's arm just above the elbow with one hand, and hold his hand with the other hand. Lift the arm, flex the elbow and move the arm across the chest.

**External rotation of the shoulder** — hold the patient's arm just below the elbow and at the wrist. Move the arm away from the side in abduction, flex the elbow and move the forearm over the head.

### Wrist

**Flexion and extension** — hold the patient's arm just above the wrist with one hand, and with the other hand, clasp the patient's palm. Bend the wrist forward. Hyperextend the wrist by bending it backward.

**Rotation** — hold the wrist with both hands. Rotate it by turning the palm from pronation to supination.

### Fingers and thumb

**Flexion** — bend all the fingers and thumb on to the palm.

**Extension** — straighten the fingers and thumb.

**Abduction** — spread the fingers and thumb as far apart as possible.

**Adduction** — move the fingers and thumb together.

**Circumduction of the thumb** — move the thumb in a circular movement.

### Hip and knee

**Flexion and extension** — place one hand under the knee and the other under the heel. Lift the leg and flex the knee, then move the knee toward the chest as far as possible without causing pain. For extension, straighten the leg and lower it to the bed.

**Abduction of the hip** — place one hand under the knee and the other under the heel. Keep the leg straight and lift it slightly, then move it slowly away from the midline of the body. Move the leg back to position by adduction.

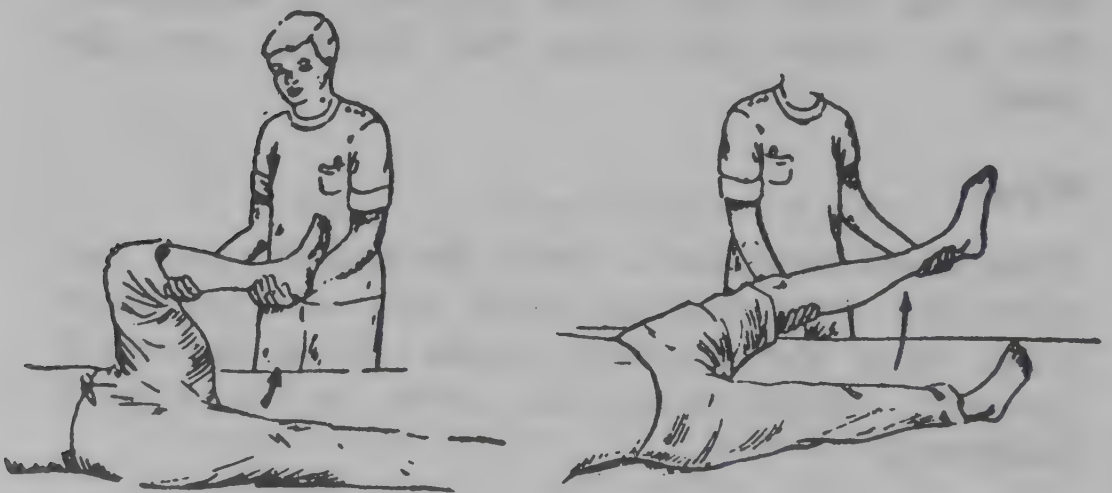


Fig. 8 C — Flexion and extension of the hip and knee



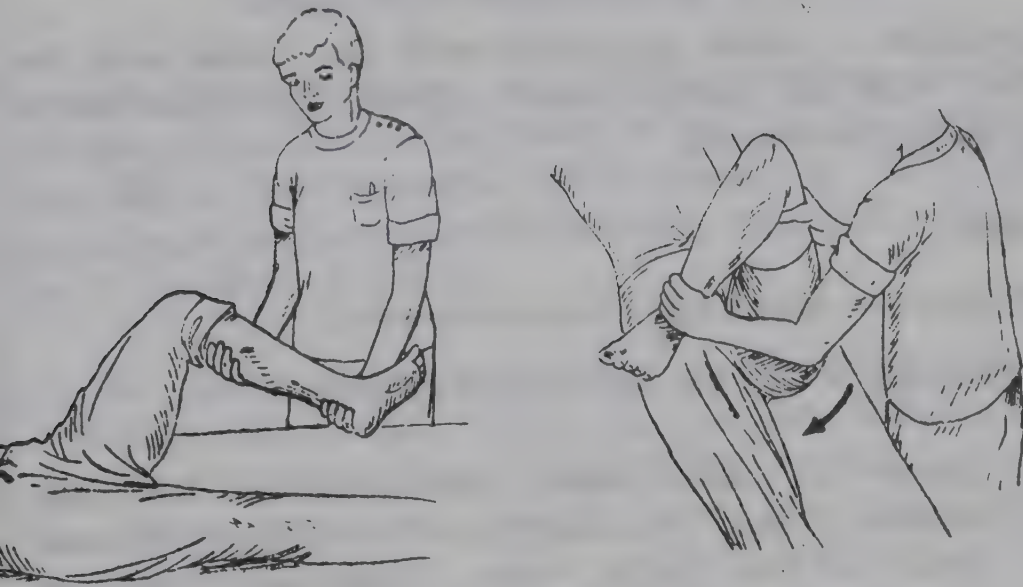


Fig. 8 D — Abduction and rotation of the hip

Rotation of the hip — place one hand under the knee and the other under the heel. Flex the knee to a right angle. Keeping the knee flexed move the foot away from the midline in abduction for external rotation. Then, with the knee still flexed, move the foot back to the midline in adduction and over the other leg for internal rotation.

### Ankle

Flexion — hold the heel in one hand and place the other hand over the foot. Move the foot upward toward the front of the leg (dorsiflexion).

Extension — While holding the foot in the same way, move the foot in the opposite direction with the toes pointing down (plantar flexion).



Dorsiflexion



Rotation of the ankle joint

Fig. 8 E — Ankle

Rotation — hold the ankle with one hand and the foot with the other hand. Move the foot in a circular movement.

### **Toes**

Flexion — bend the toes downward.

Extension — bend the toes upward.

Do not grasp the nails when exercising the toes and fingers because it may be painful to the patient. Record which parts of the body were exercised and any limitations or improvements.

### **Ambulation**

Patients need rest to aid recovery from disease, injury or surgery. However, complete or prolonged bed rest has harmful effects. Hypostatic pneumonia, decubitus ulcers, decreased appetite, constipation, contractures, insomnia, and the tendency for thrombi (blood clots) to form in the veins are some of the problems that develop and lead to serious consequences. Patients are urged to be up and moving about as early as possible after surgery or an illness in order to avoid complicating problems.

Ambulation helps keep the joints and muscles in good condition, stimulates the respiratory and circulatory systems and improves the appetite and elimination all of which hasten the patient's recovery. Walking and moving about is of psychological benefit by improving the patient's sense of well-being. Everything a person does for himself provides exercise in some way.

Many patients are able to get out of bed and walk easily without assistance. They should be encouraged to be active. Patients, who are trying to walk for the first time after surgery or an illness or who have weakness, need assistance in walking. The patient may

require help in getting to a sitting position on the edge of the bed. He is allowed to sit on the edge of the bed for a few minutes before standing. The patient's clothing is adjusted and shoes put on while sitting, then he is assisted to stand.

If the patient has weakness on one side, the nurse walks on the weak side. The nurse offers her arm (the one farthest from the patient) to the patient with the palm turned up, which gives her more ability to support the patient. The patient holds her arm for support. The nurse uses her hand and arm nearest the patient to give support at his elbow.

Some nurses like to place a safety belt around the waist of a patient who is unsteady in walking. The nurse has the patient hold her distal arm for support and uses her free hand to grasp the belt at the back of the patient.

It is advisable to have two persons, one on each side, to assist a very large or weak patient in walking. The patient is never allowed to put an arm around the shoulder of the nurse for support, because if the patient should fall, it could cause severe strain and injury to the nurse's back as well as injury to the patient.

## **Walking with an Aid**

### **A cane**

A person who needs help in keeping his balance when walking or who has one weaker leg, finds a cane very helpful. The cane needs to be of the correct length for the user. When the person stands upright with the elbow slightly flexed and holding the cane, it should touch the floor slightly to the side and 15 cm (6 inches) in front of the foot. Some canes are adjustable; others are not. All canes should have a rubber tip to prevent slipping.



The person who uses a cane because of a balance problem may use it in either hand. He should maintain good posture and walk with a normal gait, but slowly enough to use the cane easily. When the cane is used because of a weak leg, it is held on the side of the strong leg. The patient should stand erect, place the cane slightly to the side and in front of his foot and make sure he has good balance before starting to walk. He will find walking easiest if he uses the following pattern :

1. Move the cane forward 10 to 15 cm (4 to 6 inches).
2. Move the weak leg forward until it is opposite the cane.
3. Place the weight on the weak leg and the cane.
4. The strong leg is moved forward beyond the cane. The steps of both feet should be equal for a normal walking style.
5. Repeat the pattern of steps.

### **A walker**

Patients, who have at least one leg strong enough to bear some weight, can use a walker. Some people with a problem of balance prefer using a walker. It provides more support and stability than a cane.

There are a number of styles of walkers. Some have small wheels on each leg and are called **rolling walkers**. Others, called **pick-up walkers**, have a rubber tip at the bottom of each leg. They are the most stable type of walker. Some pick-up walkers have the sides attached in such a way that they will fold. They require very little space when not in use. Some walkers have a seat that can be securely fastened across the back for the patient to sit down. The seat can be folded out of the way when not needed. Most walkers are adjustable in

height by means of a screw in each leg. The top of the walker should come to just below the waist level so the handgrip can be held comfortably when the arms are slightly flexed.

The patient should stand erect, hold the handgrips of the walker, then move forward in the following pattern:

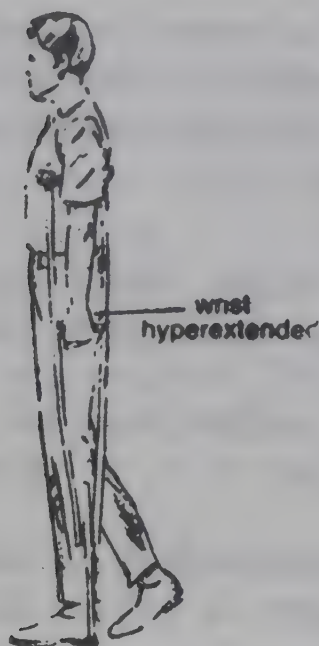
1. Move the walker and the weak leg forward 10 to 15 cm (4 to 6 inches).
2. Put the body weight on the arms for support (some weight is put on the weak leg only if permitted).
3. Move the strong leg forward.
4. Repeat the movement pattern.

The nurse walks slowly behind and slightly to the side of the patient while he is learning to use the walker and until he shows good confidence and ability to use it.

When the patient wishes to sit on the bed or a chair, he turns in front of it, using the walker for support, and moves backward until his legs touch the chair. He reaches behind with one hand and then the other to hold the arm or seat of the chair. Using the chair or bed for support, he lowers himself on to it.

### Crutches

Adjusting to walking with crutches is difficult for most people. It requires much practice. The person using them needs strong arm and shoulder muscles. Exercises are given to prepare the muscles to support a large portion of his weight with his hands and arms. Exercises include lifting sandbags while lying flat on



Crutch-walking —  
weight-bearing  
position.

Fig. 8 D — Crutches

the bed, and pushing and pulling the body on the bed while grasping the head of the bed with the hands. These and other exercises are taught and supervised by a physiotherapist. The exercises are started as much in advance as possible of the patient starting to walk with crutches.

There are various types of crutches. The **axillary crutch** is used frequently. It has a slightly curved piece across the top called the **axillary bar** that comes under the arm near the axilla. A **hand bar** is located about a third of the way down the crutch.

Another type that is often used is the **Lofstrand** or **Canadian Crutch**.<sup>•</sup> It has a semicircular piece that fits around the upper arm and a hand bar protruding from the front of the crutch. The patient must support the body weight with the hands.



Crutches are made the correct length for each individual. Most crutches are made so the length can be adjusted. Measurements for axillary crutches are taken with the patient lying in bed in good alignment on his back! Measurement is made from a point 5 cm (2 inches) from the lateral side of the foot and 15 cm (6 inches) in front of the toes to a point 5 cm (2 inches) below the axilla. The hand bar is adjusted so the elbow is flexed about 30 degrees when the hand holds the bar. The arms and hands have the most strength and stability for bearing body weight with this amount of flexion rather than when the arm is fully extended.

The patient should not bear weight on the crutches by resting the axillae on them, either when walking or resting. It causes pressure on nerves going to the lower arm and hand that produces numbness, and sometimes paralysis of the arms and hands — a problem called **crutch palsy**. Prevention of it is to always bear the weight with the hands.

Rules for the use of crutches that should be explained to the patient are :

1. Hold the head up and look forward as in normal walking.
2. The crutches are placed slightly ahead and to the outside of each foot.
3. Use the hands, and not the axillae, to support the body weight.
4. Keep the back straight. Bend at the hips.
5. Move the crutches and the weaker foot forward together at the same time.
6. Walk with a smooth, steady rhythm.
7. Have correct length crutches with heavy rubber tips to prevent slipping.

The amount of weight bearing permitted on both legs determines the type of gait the person can use in walking with crutches. The gait is selected before the patient attempts to walk with the crutches. Sometimes it is necessary to explain to a patient why he cannot use the same gait as another patient.

The patient must first learn how to stand and how to place the crutches. To rise from a sitting position, he holds both crutches in one hand on his strong side. With the other hand, he holds the chair arm, the edge of the chair seat or the bed and pushes on it to rise himself to the standing position. He balances himself on the strong leg or on both legs if weight bearing is allowed. At the same time, he carefully places a crutch under each arm, keeping the tips about 5 cm (2 inches) from each side and 15 cm (6 inches) in front of his feet. He is then ready to begin walking.

The most commonly used gaits by patients walking with crutches are :

### **Three-point gait**

This is for those who can bear full weight on one leg and partial or no weight on the other leg. The weak leg may be held off the floor.

1. With the strong leg supporting the weight, move the crutches and the weak leg forward 10 to 15 cm (4 to 6 inches).
2. The weight is changed from the strong leg to crutches.
3. Step forward with the strong leg so the foot is just behind the crutches.
4. Repeat the pattern of movement.

**Four-point gait**

Patients having muscular weakness, balance problems or poor co-ordination use this gait. The four-point gait is the most stable. Partial weight bearing on both legs is necessary.

1. Start with the weight distributed between both legs and both crutches
2. Move the left crutch forward.
3. Move the right leg forward.
4. Move the right crutch forward.
5. Move the left leg forward.
6. Repeat the pattern of movement.

**Two-point gait**

This is a faster and more normal walking gait. It requires partial weight bearing on both legs.

1. Start with the weight distributed on both legs and both crutches.
2. Move the left crutch and the right foot forward.
3. Move the right crutch and the left foot forward.
4. Repeat the pattern of movement.

To return to a sitting position, the patient walks up to the chair or bed, turns around with the aid of the crutches and moves backward until the back of his legs touch the seat. Both crutches are then held in one hand. He reaches back to the chair or bed with the other hand and lowers himself, using support from both the crutches and the seat.



Steps are not difficult for a patient to manage on crutches if a few simple movements are followed. An easy way to remember them is "angels go up and devils go down." When going up steps, the good or stronger leg (the angel) is placed on the higher step and the weight placed on it while the crutches and weaker leg are moved up. When going down steps, the weak or injured leg (the devil) and the crutches are placed on the lower step first, followed by the good leg. The pattern is repeated one step at a time.

### Summary

Activity is normal for human beings. Loss of activity causes problems of body function. Exercise helps prevent additional physical problems and assists patients to a maximum recovery. Active exercise is preferred, and aids used when necessary. Passive exercise, for helpless patients, is a nursing responsibility. All possible joint movements are to be maintained. However, no movement should be forced to the point of causing pain. The limb distal to the joint being exercised is always supported. The person using a walking aid must be instructed in the correct posture and sequence of movements. Canes, walkers and crutches need durable rubber tips to prevent them from slipping on the floor.

### Additional Study Topics

1. The causes and prevention of contractures.
2. The muscles and their actions.
3. Electronic devices to aid paraplegics and quadriplegics.
4. Exercise for the cardiac patient's rehabilitation.
5. Exercise for the stroke patient.

**Learning Activities**

1. Do all the range-of-motion movements with your own body, then do all the movements for a classmate while she lies on a bed.
2. Practice the two-point, three-point and four-point gaits with a pair of crutches. Note problems you encounter with each gait.
3. Adjust a pair of crutches to classmates of different heights.
4. Assist a classmate to get out of bed and walk.
5. Visit a physiotherapy department. Observe different types of exercises being given and the reason for each.

## **CHAPTER 12**

### **PROTECTIVE RESTRAINTS**

#### **CHAPTER CONTENTS**

**Reasons for using restraints**

**Principles related to their use**

**Types of restraints**

**Wrist or ankle**

**Soft strap restraint**

**Clove-hitch restraint**

**Body restraint**

**Vest or jacket restraint**

**Elbow or knee restraint**

**Mitt restraint**

**Safety practices in using restraints**

#### **LEARNING OBJECTIVES**

1. Applying a wrist or ankle restraint in a manner that does not affect circulation.
2. Applying a body or jacket restraint to provide safety without discomfort.
3. Applying elbow restraints to a child that will stay in place without discomfort.
4. Transporting patients safely by wheelchair or stretcher.



## PROTECTIVE RESTRAINTS

Restraints are useful in preventing injury to patients. They are used to immobilize a part of the body, support a part of the body, restrict movement and to prevent the patient from harming himself or another person.

Principles to aid in using restraints as a benefit and guard against their misuse are :

1. Restraints are used for the safety or protection of the patient. They may be used to prevent a disoriented or partially conscious patient from removing a drainage tube or other equipment. They may be used to prevent a patient from falling from the bed or a chair.
2. Restraints must not be used for the punishment or discipline of any patient. The patient must always be made to feel that they are used only because the staff care about his welfare.
3. Apply restraints smoothly and snugly without obstructing circulation. Allow movement, but not injury. Maintain as normal an anatomic position as possible. If coolness of the skin, pallor or cyanosis, numbness, loss of sensation or movement occurs, the restraint must be removed immediately. Massage the area well before reapplying the restraint in a manner that will not interfere with circulation.
4. Restraints are released every two hours, the position changed and the part exercised unless contraindicated. This is done to relieve pressure improve circulation and provide comfort to the patient. It will help the patient understand that the restraints are a safety measure.

## **Types of Restraints**

Restraints may be purchased from a medical supplies shop. They may also be made in a hospital linen department or by a tailor from strong cloth or **canvas**. Some restraints are better if made from softer cloth.

### **Wrist or ankle restraints**

This is a frequently used restraint. One wrist and the opposite ankle may be restrained to prevent a **restless** patient from falling or getting out of bed. A restraint may be used on one or both wrists to prevent a patient from pulling on a tube or doing damage to a **surgical area**.

A wrist or ankle restraint is made in two parts. A wide, padded portion fits around the wrist snugly enough that the hand cannot be pulled through and loosely enough to allow good circulation. A long tie or strap attached to the wrist portion is securely tied or fastened to the side of the bed.

A simple wrist restraint called a **clove-hitch** is made from a long piece of roller gauze or soft cloth. Loops are made and it is put on the wrist or ankle and the ends tied to the side of the bed. An advantage of the **clove-hitch** is that it will not tighten and cut off circulation.

### **Body restraint**

Various styles of body restraints are available. A satisfactory one is made by two strips of strong material laid one on top of the other and stitched together across the strips midway of the length. A shorter, portion is fastened around the patient's waist and a longer strip is secured to the sides of the bed.

### **Jacket or vest restraint**

Strong cloth is made into a vest with long ends that are crossed either in the front or the back through a

slash in the material. The ends may be tied or fastened to the sides of the bed to keep a restless patient from falling. It may be used to assist a weak patient sit upright in a wheelchair without falling forward.

### **Elbow or knee restraint**

It is used to prevent the joint from bending. It is most often used with children to keep them from scratching a rash, injuring facial or other surgery or removing a tube. It may be used to splint the joint to prevent movement following an injury. The child can move the arms freely and engage in many entertaining activities.

The restraint is made from a piece of soft cloth that is wide enough to extend well above and below the joint and long enough to wrap around it. Another piece of cloth is stitched on it to form narrow pockets into which tongue blades or strips of plastic are inserted. The restraint is wrapped around the elbow and fastened by small ties or velcro. The top of the restraint may be pinned to the child's shirt to keep it from sliding down. The restraints may be made attached to an adjustable vest that closes in the back.

### **Mitt restraints**

A mitt restraint is made of cloth placed over the hand and tied at the wrist to prevent a semiconscious patient from pulling at tubes or the bed linen. Specially designed mitts are available. An excellent idea is to place a 10 cm (4 inch) diameter soft foam rubber ball in the palm of the patient's hand and wrap gauze bandage around it to hold it in place. The patient has a tendency to squeeze the ball frequently which exercises the fingers and improves circulation. He is unable to grasp objects, while he has freedom to move his arms.



### **Safety Practices in Using Restraints**

All types of restraints are removed every two hours. The extremity is exercised, then the restraint is reapplied. In order to make the removal of restraints easier, a half-bow knot is used to tie it to the bed or chair. By pulling the loose end it is released and the restraint is quickly ready for removal. Should an emergency arise, the easy, quick removal of restraints could be very important.

Restraints are never tied to a bed rail. A bed rail can become loose and fall or be removed by someone who does not know the restraint is tied to it. The patient could be painfully or seriously injured. Restraints should not be tied to the immovable part of an adjustable bed, but to the part of the bed that would move with the patient when it is adjusted.

All patients being transported in a wheel chair should be held securely in the chair by a leather or heavy cloth strap. Patients being transported on a stretcher need to be protected by straps placed over him and around the stretcher. It is recommended that three straps be used. One is placed over the shoulders, one at the hips and the third one just below the knees. The straps are adjusted to be tight enough to cause the patient to feel secure, but not uncomfortable.

Velcro is useful as a means of fastening a restraint either on the patient or to the bed or chair. There must be sufficient amount of velcro to hold firmly. It must be replaced when its adhesive quality decreases. It has the safety feature of allowing quick release of the restraint.

### **Summary**

Nursing care includes protecting a patient from harming himself or others. It may require the use of restraints. It is important that restraints always be used as a

protection and not as punishment. All restraints are simple enough to make that there should never be an excuse for not providing the protection they give. They must be properly applied and checked frequently to make certain that circulation is not hindered. The restraints are to be released and the extremity exercised regularly.

### **Additional Study Topics**

1. Psychological effects of restraining a person.
2. The psychological need for physical safety.

### **Learning Activities**

1. Obtain the different types of restraints used in your hospital. Working with a classmate, apply them to each other in a bed and on a chair. Evaluate their comfort and effectiveness.
2. Make wrist and body restraints from bed linen or other available material that could be used as an emergency measure.

## **CHAPTER 13**

### **THE MEDICAL RECORD**

#### **CHAPTER CONTENTS**

**Protective care of the record**

**Legal value of the record**

**Contents of the record**

**Record systems**

**The traditional method**

**Problem-oriented medical records**

**General rules of recordings on a chart**

#### **LEARNING OBJECTIVES**

- 1. The purposes and value of medical records.**
- 2. The difference between traditional and problem-oriented medical records.**
- 3. Rules for recording on a patient's medical record.**



## **THE MEDICAL RECORD**

A medical record or chart is a written account of the patient's physical condition on admission to the hospital and his progress. It is the property of the hospital, clinic or other health facility that maintains it. Only institution staff, who give care to the patient, may handle and read it. No member of the patient's family, member of the legal profession or any other person may take the record or a copy of any part of it unless they have obtained the required authorization from the designated person of the hospital staff.

### **Legal Implication of a Medical Record**

The medical record is a legal document and must be carefully guarded from misuse. All information must be kept confidential by those permitted to use it. It is accepted that all treatments or nursing care recorded on the chart is legal evidence that it was done. Anything done for the patient, but not recorded, is legally considered not done. The medical record may be used as a legal instrument in an insurance or accident settlement in an investigation of a possible crime or in case of a malpractice suit against the hospital or a staff member.

### **Contents of a Medical Record**

The medical record is a written history of the patient's illness, observations about him, a record of what has been done for him and his progress. It is composed of a number of different forms. The administrative staff of each institution decides what forms are most suitable for their use. The basic forms found in most medical records are 1) an admission record containing identifying information, 2) a graphic sheet for the vital signs, 3) a doctor's order sheet, 4) medical history and physical findings, 5) progress notes for the

doctor's use, 6) nurses' notes, 7) medication record, 8) laboratory sheet, and 9) consent forms for surgery, certain diagnostic tests or special treatments. Other forms are added as needed or desired.

### **Purposes of a Medical Record**

The chart serves as a means of communication between hospital personnel. The information it contains is helpful in making a diagnosis, evaluating treatment, planning the patient's care, affording continuity of care and in planning teaching to the patient. Medical records play an important part in medical study and research.

### **RECORD SYSTEMS**

#### **Traditional records**

The usual way of maintaining a chart, known as the traditional method, has been for the doctor to complete the medical history, write orders for treatment on an order sheet and record on the progress notes. An admissions clerk usually completes the admissions form. Nurses record the patient's vital signs on the graphic sheet, keep the medications recorded and indicate care given and the patient's condition on the nurses' notes. She also records on special forms that are required such as an intake — output record or diabetic records.

#### **Problem-Oriented Medical Records**

In recent years a charting system has been promoted called the problem oriented medical record (POMR). It is intended to put more emphasis on action. It is aimed at helping medical and nursing personnel to develop more skill in recognizing problems and starting action to correct or overcome each problem.

The POMR system has four basic parts: 1) a data base, 2) a problem list, 3) an assessment of and plan for each problem and 4) progress notes. The data base is the admission history including physical findings,



laboratory test results, family and social history. New information is added as it is obtained. The problem list is compiled from the data base information and is kept at the front of the chart. New problems are added as they develop. The date of the resolution of each problems is indicated.

The assessment and plan of action is always recorded in the same format 1) subjective information from the patient or family, 2) objective information from observation, physical examination or diagnostic tests, 3) assessment of the problem and 4) the plan of action.

All members of the health team write on the problem list. The same progress notes sheet is used by all members of the medical team — doctors, nurses and paramedical staff. The number of forms on the record are reduced with this system. Graphic sheets and any other special forms are attached as needed. Both systems of charting have merit. Hospital administration staff select the system best suited to their institution. However, the system of medical records should be the same throughout an institution.

### **General Rules of Recording on a Medical Record**

Certain general rules apply to any system of patient medical record. The recording should be accurate, brief, clear and complete. The date and time must always be clearly indicated. All entries are made by the person giving the nursing care or making the observation. Entries are to be clearly signed with the name and title of the person making it. No erasures are permitted. If an error is made, draw a line through what is incorrect, rewrite and initial it. Use only abbreviations accepted by the institution.

### **Summary**

A medical record is kept for each patient as a means of communicating information about the patient to all



staff members. It is a permanent record to which reference may be made at a later date for information. It is a very valuable document that is to be protected from loss or destruction. All recording should be done with thoughtfulness. There are different methods of recording on the medical record. The leaders in each institution have the responsibility of selecting the system that is best for their needs and purposes. All areas of the institution should use the same system.

### **Additional Study Topics**

1. The medical record as a communication tool.
2. Legal implications of the medical record.

### **Learning Activities**

1. Evaluate records of discharged patients regarding brevity, completeness and clearness of the patient's condition and progress.
2. Evaluate the records of two or more current patients to determine their progress.

## **UNIT IV**

### **THERAPEUTIC NURSING ACTIVITIES**

## **CHAPTER 14**

### **DETERMINING NURSING NEEDS**

#### **CHAPTER CONTENTS**

**Principles of the nursing process**

**Steps in the nursing process**

**Assessment of patient needs**

**Interviewing the patient**

**Observation of the patient**

**Examination of the patient**

**Other sources of information**

**Nursing diagnosis**

**Nursing care planning**

**Implementing the plan**

**Evaluation**

#### **LEARNING OBJECTIVES**

- 1. Developing nursing assessment skill.**
- 2. Using information to make a nursing diagnosis.**
- 3. Planning the nursing care of an individual patient.**
- 4. Evaluating the nursing care being given to a patient.**



## DETERMINING NURSING NEEDS

In planning and providing suitable, effective nursing care for patients, a term, **nursing process**, has come into use. It refers to the fact that a nurse takes certain steps in caring for a patient. The nursing process is an orderly way of identifying and solving the immediate problems of the patient and family. There are four essential principles in the nursing process : 1) it is planned, 2) it is centered in the patient, family or community, 3) it faces the problems and 4) it is directed toward achieving results or goals. Steps in the nursing process are : assessment, planning, implementing and evaluating.

### Assessment of Patient Needs

Assessment is a systematic, logical collecting of data (information), then giving meaning to the data which is called making a **nursing diagnosis**. All the information obtained in doing the assessment is combined with data obtained by other health team members. It is used to make plans for giving maximum nursing care to the patient. The information should include :

1. Information about the patient as an individual and his living habits.
2. Ways he manages daily living activities.
3. Activities that have become problems.
4. Present state of health and abilities.
5. The opinion and treatment plans of the doctor.

The nurse needs a good understanding of the biological sciences, anatomy, physiology, human growth and development, sociology and psychology, for making a good assessment of the patient and his problems. Normal body function must be known in order to detect and understand the abnormal.

Assessment methods used to collect the data are interviewing, observation, examination, conferring with other health team members and from the records and reports about the patient.

### **Interviewing**

Obtaining information from a patient or his family in order to plan the nursing care is referred to as interviewing or taking a nursing history. From it, the nurse gains an understanding of what the patient thinks, feels and is experiencing. It indicates the patient's understanding of the illness and his hopes or fears for the future in relation to the illness. It is helpful to have a knowledge of his daily living habits regarding nutrition, sleep and rest, exercise, elimination, bathing and other personal hygiene practices.

Some hospitals have a special nursing history form on which the nurse can fill in all the information. An unconscious or seriously ill patient cannot be interviewed. The nurse then turns to a family member or a friend to get the necessary information. She will also need to rely heavily on observation and examination to obtain an understanding of the patient's condition and needs.

### **Observation**

A definition of observation is, "the gathering of data by recognizing and noting facts and occurrences." It is an important activity of a nurse. An aim of every nurse should be to develop more skill in the art of observation. It requires careful concentration on the ability to see accurately and in detail, to understand what is seen and to use the information effectively. It is developed by practice. A knowledge of normal body functioning and behaviour enables the nurse to detect the abnormal signs that indicate illness. In observation, the senses of sight, hearing, touch and smell are used.

Evidence of abnormal changes in body appearance, function or in behaviour are called **signs** and **symptoms**. A **sign** refers to objective evidence of disease which means it can be recognized by someone other than the patient. A specific method of examination may be required to find it. A sign is sometimes called an **objective symptom**. A **symptom** is defined as any perceptible change in the body indicating disease. A symptom that is perceived only by the patient, such as tiredness, pain or nausea is called a **subjective symptom**. Temperature, pulse and respiration rates are called **cardinal signs** (chief or essential signs). The cardinal signs along with the blood pressure are known as the **vital signs** because they are controlled by vital organs of the body. **General symptoms** are those that affect the entire body. A group of symptoms occurring together and that characterize a particular disease is called a **syndrome**.

## Examination

The nurse, in assessing a patient, does a nursing examination which is not a repetition of or a substitute for a doctor's examination. Visual examination of a patient is called **inspection**. Skin color, body size, movement, plus much more can be determined by inspection. Examination with touch by the fingers is called **palpation**. Hardness, size, swelling or texture can be detected by this method through the fingers. Listening for sounds in the body is called **auscultation** and is usually done by using a stethoscope.

The examination is done in an orderly manner, beginning at the head and proceeding to the feet. Interviewing, observation and examination are combined to determine something of the social, mental, emotional and physiological status of the patient. Parts of it may be done while giving nursing care such as a bath.



### **Other sources of information**

Other members of the health team provide additional information about the patient. These may include the doctor, social worker, dietician, a community health nurse or some other community worker. They will have seen an aspect of the patient that the nurse cannot see. Records of previous admissions, information from a referring doctor or reports from laboratory investigations all contain valuable information to help in assessing the needs of the patient.

### **Nursing diagnosis**

After the nurse has gathered all the information about the patient, she completes the assessment by identifying the patient's problems. The term **nursing diagnosis** or **data analysis** is used for the process of determining the nursing problems. All the problems should be briefly, but clearly written such as, "coccyx area very red" or "difficulty in breathing when lying flat." Problems that could occur unless preventive nursing measures are used are called **potential problems**. They are to be included in the nursing diagnosis and the nursing care plan. There is a danger of potential problems in almost every patient. Decubitus ulcers are often a potential problem.

### **Nursing Care Plan**

A nursing care plan is a listing of all the nursing activities that will be carried out to overcome the problems discovered in making the nursing assessment. The list will need to be revised as the patient improves or new needs develop. Writing the plan provides guidance to the nursing staff throughout all twenty-four hours of the day which makes possible continuous maximum care to the patient.

The nursing care plan is formed by first deciding the objectives or goals desired for the patient. A goal is what is hoped will result. The goals are to be reason-

able, specific and clear. The nursing measures needed to reach the goals make up the nursing care plan. It will incorporate all nursing measures necessary for carrying out the doctor's orders. It will include plans for hygiene needs, nutrition, exercise, rest, sleep and teaching the patient. The nurse should be able to explain the scientific basis for each nursing action. The nursing leaders of each hospital adopt the type of nursing care plan they believe will work best in their institution. In any case, it should be written. A very comprehensive, detailed form may be used in some hospitals, especially for teaching the art of planning good, effective nursing care. In other institutions a simple method may be most suitable.

### **Implementing the Nursing Care Plan**

The implementation or carrying out of the nursing care plan is sometimes referred to as nursing intervention and means the actual nursing care given to the patient. Having a plan prevents the nursing from being done in a haphazard manner. All nursing procedures should be performed with a sense of their value and importance in attaining the desired goals for each patient. There should be an understanding of the physical and emotional effect of each procedure on the patient.

### **Evaluation**

Judging the value of a nursing care plan or of an individual procedure is an important part of providing high quality nursing service. If any part of the nursing care plan is found to be less effective than desired or possible, it should be changed immediately. A nurse should be the first to see that a change in nursing care would be beneficial. There should be formal evaluation of nursing care as in a nursing audit. However, most evaluation is done informally along with giving nursing care and deciding if the very best is being done or what alterations of care are needed.

## **Summary**

Appropriate, efficient nursing care does not just happen. It is the result of careful assessment and planning on an individual basis. Skill is needed to obtain meaningful information and make correct observations of the patient's limitations and problems. The nurse's ability to decide the nursing needs of a patient requires the application of knowledge about many subjects to the problems she finds. Detailed writing of her findings and plans for meeting the needs helps a nurse develop skill in meeting nursing opportunities.

## **Additional Study Topics**

1. Techniques of interviewing.
2. Setting goals for nursing care.
3. Nursing evaluation tools and techniques.
4. Nursing audits and their value.

## **Learning Activities**

1. Do a nursing examination using a classmate as the patient.
2. Make a nursing assessment of a newly admitted patient. Make a nursing diagnosis. Write out a detailed nursing care plan including goals.



# CHAPTER 15

## THE VITAL SIGNS

### CHAPTER CONTENTS

#### Body temperature

##### Factors affecting body temperature

Age

Activity

The time of day

The environment

##### Determining body temperature

Thermometers — types and use

Normal body temperature range

Types of fevers

Sites for taking the temperature

Contraindications for taking the temperature orally

Technique of taking the body temperature

Orally

Rectally

Axillary

Nursing measures to reduce body temperature

#### The pulse

Anatomy considerations

Pulse sites

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Pulse volume

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Apical pulse

## **Respirations**

**Terminology**

**Respiration rate**

**Respiration depth**

**Character of respirations**

## **Blood pressure**

**Physiology**

**Influencing factors**

**Equipment for measuring**

**Technique of taking**

## **LEARNING OBJECTIVES**

1. Factors in selecting the site for taking the body temperature.
2. Taking the temperature of an adult and a child by the oral, rectal or axillary routes with a mercury thermometer and recording.
3. Taking and recording a radial pulse and locating all other pulse sites.
4. Count and record the respiration rate and identify the character of the respirations.
5. Causes of variation in the temperature, pulse, respiration and the blood pressure.
6. Taking and recording the blood pressure.

## THE VITAL SIGNS

Body temperature, pulse and respiration rates and blood pressure are known as the vital signs of the body. They give an indication of body functioning and changes in function. The vital signs vary only slightly in health. Changes that occur in illness are helpful in diagnosing the illness and in evaluating the progress of the patient.

### Body Temperature

Heat is produced in the body by the chemical reactions taking place during the metabolism of food. Heat is lost from the body through the processes of radiation, conduction, convection and vaporization. The carrying away of heat by these four processes is aided by sweating, panting, lowering the temperature of the environment and decreasing the amount of clothing. The balance between the heat produced and the heat lost is the body temperature. The hypothalamus in the brain is believed responsible for regulating all the functions necessary to maintain the heat balance in the body. In a healthy adult, all the parts function so well that there is a variation of usually no more than  $0.7^{\circ}\text{C}$  ( $1.4^{\circ}\text{F}$ ) in the body temperature. This slight variation is the result of age, activity, the time of day and the environment.

### Factors affecting the body temperature

The temperature control mechanism is not fully developed at birth which allows the body temperature of the newborn to be greatly affected by the temperature of the environment. The temperature of the newborn will normally vary between  $36.1^{\circ}$  and  $37.8^{\circ}\text{C}$  ( $97^{\circ}$  to  $100^{\circ}\text{F}$ ). A child's temperature gradually becomes more stable until by the age of 12 years, it will have the stability characteristics of an adult's temperature. Elderly people tend to have a lower body temperature and are more sensitive to cold weather.



Strenuous activity increases the temperature of the body because metabolism increases. Certain athletes must be prepared for a two to three degree centigrade increase in their temperature during intensive practice or competition.

The internal body cycle of every 24 hours (called the circadian rhythm) includes variations in the body temperature. It is usually highest between 8 p.m. and 11 p.m. and lowest between 4 a.m. and 6 a.m. This is associated with the fact that activity and digestion are greatest during daytime hours and early evening. They are at the lowest level during sleep. Those who work at night and sleep in the day develop an internal body cycle opposite those who work in the daytime.

The temperature of the environment can be critical for an infant, but it can also affect the temperature of adults. Deaths of adults due to extreme heat or extreme cold continue to occur. However, they are unusual and do not usually cause us concern. We must be aware, though, that on a very hot day patients may show a slightly higher temperature than they otherwise would.

### **Determining body temperature**

A thermometer is used to measure body temperature. Various types of thermometers have been developed including some that continuously monitor the temperature. The mercury thermometer has been used for many years. It is a glass tube that has a bulb containing mercury at one end. Mercury is used because it is a liquid metal and heat causes it to expand. When the bulb is placed in contact with something warmer than room temperature, the mercury expands up the glass tube or stem. There is a constriction above the bulb which prevents the mercury from falling into the bulb on cooling until it is forced back into the bulb by shaking. Thermometers are marked according to the calibrations of either the Celsius or the Fahrenheit scale. The Celsius (also known as centigrade) scale uses 0° as

the freezing point of water and  $100^{\circ}$  as the boiling point. The Fahrenheit scale uses  $32^{\circ}$  as the freezing point and  $212^{\circ}$  as the boiling point. Conversion from one scale to the other can be done when necessary. To change Fahrenheit to Celsius, subtract 32 from the Fahrenheit reading and multiply by  $5/9$  using the formula  $F - 32 \times 5/9 = C$ . To change Celsius to Fahrenheit, multiply the Celsius reading by  $9/5$  and add 32 using the formula  $9/5 \times C + 32 = F$ .

Thermometers have the temperature marked by lines along the stem. The Celsius scale has long lines indicating each degree and short lines between for each tenth (0.1) degree. The Fahrenheit scale has a long line for each degree with a short line representing two tenths (0.2) of a degree. A thermometer is read by holding it at eye level and rotating it between the thumb and index finger until the column of mercury and the scale markings are clearly seen. The reading is noted and written on a paper or in a book.

After taking a temperature, the thermometer must always be cleaned. Organic material such as mucus or feces must be removed as it will inhibit the action of the disinfectant solution. It is cleaned before reading it by wiping it with a piece of cotton from the top of the stem downward to the bulb while rotating it. After reading, it is washed with cool, soapy water, then rinsed under cold, running water. Hot water must not be used as it would send the mercury rushing up the stem and break the thermometer. It is kept in a disinfecting solution. After keeping it for a sufficient length of time in the disinfectant solution rinse it in clean water dry and put it in its container or leave in clean water.

The normal range of body temperature is  $36.1^{\circ}$  to  $37.6^{\circ}\text{C}$  ( $97^{\circ}$  to  $99.6^{\circ}\text{F}$ ). When the temperature goes above that range, it is referred to as **fever** or **pyrexia**. A very high fever is called **hyperpyrexia**, while a temperature below the normal range is called **hypothermia**.

Types of fevers, according to their characteristics, are constant, intermittent, remittent and relapsing.

A **constant fever** is continuously elevated and does not vary more than one degree in 24 hours.

An **intermittent fever** is one that rises and falls, reaching normal at some time in the 24 hour period.

A **remittent fever** is one that rises and falls, but does not reach normal in a 24 hour period.

A **relapsing fever** is one that is elevated for several days, goes to normal for one or two days, then rises again. The return to normal is at irregular intervals.

**Phases of a fever** — The course of a fever is described in three stages or phases.

1. **Onset or invasion** of fever is the period when the body temperature is rising and it may be a sudden or gradual process.
2. **Fastigium or stadium** of fever is the period when the body temperature has reached its maximum and remains fairly constant at a high level.
3. **Defervescence or decline** of the fever is the period when the elevated temperature is returning to normal. The fever may subside by crisis or lysis. A gradual return of body temperature to normal after a fever is **lysis**. A sudden return of body temperature to normal after a fever is **crisis**.

In determining the temperature of a patient, the thermometer needs to be placed as near as possible to a good blood supply. The area of the mouth under the tongue has many blood vessels. The rectum is an even better site for accuracy in measuring the temperature because of the rich blood supply. When using either of these



sites is a problem, the axilla is used though the measurement is not as accurate. The temperature in the axilla is usually  $0.6^{\circ}\text{C}$  ( $1.0^{\circ}\text{F}$ ) lower than the oral temperature. A rectal temperature is usually  $0.4^{\circ}$  to  $0.6^{\circ}\text{C}$  ( $0.7^{\circ}$  to  $1.0^{\circ}\text{F}$ ) higher than the oral temperature. The most frequently used site for taking the temperature is the mouth. Most people prefer to have their temperature taken orally. It is convenient and the least disturbing. However, there are a number of situations when it is necessary or advisable to use one of the other methods. They include :

1. Infants or young children who cannot hold it or could break it in the mouth.
2. Patients with disease or surgery of the mouth or nasal passage.
3. Confused, irrational or unconscious patients.
4. Patients receiving oxygen through a mask or nasal tube.

### **Taking an oral temperature**

An oral temperature is taken in the following manner :

1. Wipe the thermometer with a piece of cotton or rinse with cold water. Wipe from the bulb up the stem while rotating the thermometer. Discard the cotton.
2. Make sure the mercury is below  $35^{\circ}\text{C}$  ( $95^{\circ}\text{F}$ ).
3. Ask the patient to open his mouth and place the thermometer bulb under his tongue. Ask the patient to close his lips to hold the thermometer in place.
4. Leave the thermometer under the tongue at least for 2 minutes.
5. Remove the thermometer.

6. Wipe the thermometer with clean cotton from the stem to the bulb while rotating it. Discard the cotton.
7. Rotate the thermometer, while holding it at eye level, until the mercury is clearly seen. Read the temperature.
8. Wash the thermometer in cool, soapy water. Rinse it with cold water.
9. Shake the thermometer to below 35°C (95°F) and replace it in a container of disinfectant for disinfecting it.

### **Taking a rectal temperature**

The procedure for taking a rectal temperature is as follows :

1. Provide privacy and assist the patient to a lateral position. Fold the top sheet back to expose the buttocks.
2. Wipe the thermometer with cotton and discard the cotton.
3. Make sure the mercury is below 35°C (95°F).
4. Apply lubricant to the thermometer for 2.5 to 4 cm (1 to 1.5 inches) from the bulb end.
5. Raise the upper buttock with one hand to expose the anus. With the other hand, insert the thermometer 1.5 to 4 cm (0.5 to 1.5 inches) depending on the age and size of the patient. The bulb must go beyond the anal sphincter.
6. Hold the thermometer in place for three minutes. then remove.
7. Wipe the thermometer from the stem to the bulb while rotating it and discard the cotton.
8. Rotate the thermometer, while holding it at eye level, until the mercury is clearly seen. Read the temperature.

9. Wash the thermometer in cool, soapy water. Rinse it with cold water.
10. Shake the thermometer to below 35°C (95°F) and replace it in its container of disinfectant solution.

### **Taking an axillary temperature**

The temperature is taken in the axilla by the following method :

1. Wipe the thermometer with cotton and discard the cotton.
2. Make sure the mercury is below 35°C (95°F).
3. Expose either axilla of the patient according to convenience. Dry with a towel if it is moist.
4. Place the thermometer in the axilla and fold the patient's arm onto his chest. Hold the arm if necessary.
5. Leave the thermometer in place for five minutes, then remove.
6. Wipe the thermometer from the stem to the bulb while rotating it and discard the cotton.
7. Rotate the thermometer at eye level until the mercury is clearly seen. Read the temperature.
8. Wash the thermometer in cool, soapy water. Rinse it with cold water.
9. Shake the thermometer to below 35°C (95°F) and replace it in its container of disinfectant solution.

Nursing measures that will help reduce an elevated temperature are, 1) open windows and use a fan to circulate air, 2) remove extra bed covers or unnecessary clothing and 3) increase fluids unless contraindicated.



## The Pulse

The heart is a marvelous organ that works continuously whether we are active or sleeping. With each beat of the heart, the two atria contract first emptying their blood into the ventricles. The ventricles then contract forcing the blood into a complex system of arteries. A brief moment of rest follows before the action is repeated. The blood flows in waves through the arteries. At certain points in the body, an artery lies over a bone

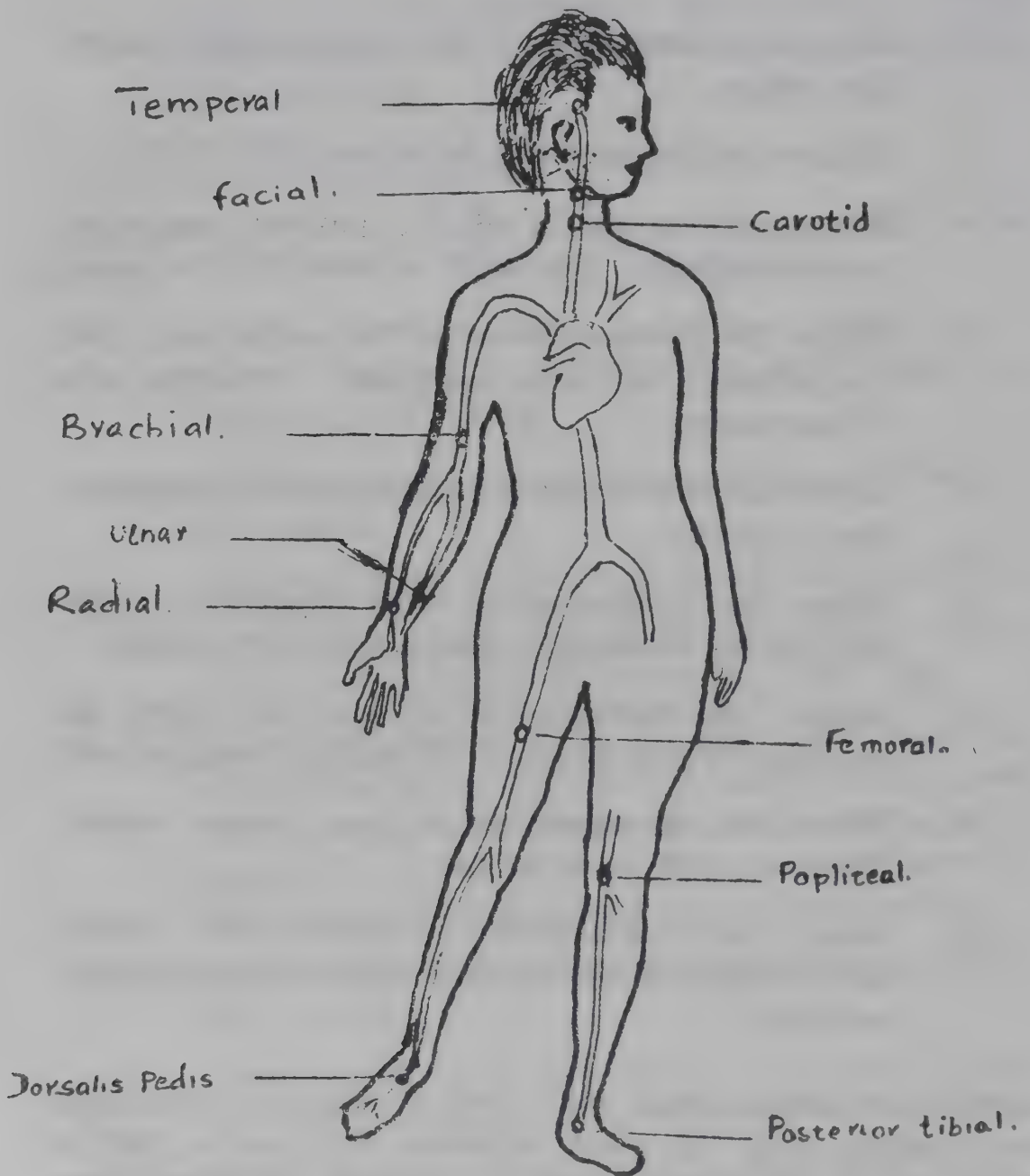


Fig. 9 — Pulse Points

close to the skin. The waves of blood flowing through the arteries at these points are easily felt and are called the **pulse**.

A name has been given to the pulse at each site corresponding to the name of the artery. The most frequently used site for feeling the pulse is at the wrist where the radial artery passes over the radius bone just above the thumb and is called the **radial pulse**. The **temporal pulse** is found just in front of the ear. The **carotid pulse** is located on the neck just below the angle of the jaw. The **femoral pulse** is in the groin about the midpoint of the inguinal ligament. The **pedal pulse** is felt just below the middle of the ankle on the anterior portion of the foot. The pulse is taken to determine its **rate, rhythm, volume and tension**.

### **Pulse rate**

The number of beats or pulsations per minute of the pulse is called its **rate**. There are a number of factors that affect the pulse or heart rate. The normal range of the heart beat is partly dependent on the age of the person. A newborn's heart rate normally varies from 115 to 140 per minute. The heart rate gradually becomes slower until by the age of about 18 years, it will be between 60 and 100 where it will remain during adulthood. It tends to increase slightly in the elderly. The pulse rate of a female is usually 5 to 10 beats more per minute than that of a male of the same age. A pulse rate above 100 in an adult is called **tachycardia**. A rate below 60 is called **bradycardia**.

**Activity** causes an increase in the pulse rate because more oxygen is required by the body. The heart beats faster in order to supply the needed oxygen. Food increases the heart rate according to the kind and amount taken. The chemical changes in the process of digestion require oxygen which influences the pulse rate.

Anything that affects **body temperature** also affects the pulse rate. Increase in the external heat as well as fever increases the rate. The pulse increases 7 to 10 beats per minute for each degree of increase of the body temperature.

Many drugs (medications) affect the pulse rate. Those that are stimulants increase the heart rate and those that are depressants decrease the rate. Some substances found in food, such as caffeine in coffee and tea, affect the heart rate when taken in large amounts.

The activity of the heart is partially controlled by the nervous system. As a result, pain and emotions such as fear, anger or anxiety increases the pulse rate.

### **Pulse rhythm**

The pattern formed by the interval between the pulse beats is called the **rhythm**. An equal interval of time occurs between beats in a normal pulse. When there are unequal intervals between beats, it produces an irregular rhythm which is called **arrhythmia**. They are important, when they occur, in assessing the functioning of the heart.

**Intermittent pulse** is one in which the beats are missed at regular intervals. In intermittent pulse, there is a difference between the apical and the radial pulse. It is known as **pulse deficit**. When the cardiac contractions occur prematurely i.e. before they are normally due in the cardiac cycle, it is called **extrasystolic** pulse.

Rapid contractions of the atrium causing irregular contractions of the ventricles in both rhythm and force is called **atrial fibrillation**. The rapid twitchings of the ventricles are called **ventricular fibrillation**.

**Sinus arrhythmia** is a condition in which the pulse rate is rapid during inspiration and slow during expiration.



**In dicrotic pulse**, there is one heart beat and two arterial pulsations giving the sensation of a double beat.

### **Pulse volume**

The amount of blood flowing through the arteries is the **volume**. With a moderate amount of pressure by the fingers, the artery should feel full with each beat which is referred to as a full **pulse**. When the volume is decreased, as results from a hemorrhage, the pulse will feel **weak, thready** or **feeble**.

### **Water hammer pulse or Corrigan's pulse or collapsing pulse**

A full volume but rapidly collapsing pulse, occurring in aortic regurgitation.

### **Bounding pulse**

Signifies an increased stroke volume as seen in exercises, anxiety, anaemia, hepatic failure, heart block and water hammer pulse.

### **Pulsus alternans**

Alternate strong and weak beats.

### **Bigeminal pulse**

Two pulse beats which occur together, regular in time and force.

### **Weak wiry thready pulse**

A small weak pulse that feels like a wire or thread on palpation of arteries.

### **Pulse tension**

The **tension** of the pulse is the result of the pressure of the blood upon the artery wall. When the tension is high, the artery feels hard and is difficult to compress. An artery that is soft and easy to compress has low

tension. It should be in between, neither hard nor easily compressed.

### Counting the pulse

The patient should be in a comfortable position and at rest for at least 10 to 15 minutes. The index, middle and third fingers of the hand are used for locating the pulse. The nurse does not use her thumb because there is a pulse in the thumb that could be confused with the patient's. A watch with a second hand is used for counting the pulse. The pulse with normal rhythm may be counted for 15 seconds and the number multiplied by four. If the pulse is irregular count the pulse for a full minute.

In counting the pulse, the nurse :

1. Selects the pulse site.
2. Places the fingertips on the pulse.
3. Counts for the necessary length of time.
4. Notes the rhythm, volume and tension.
5. Leaves the patient comfortable.

### Apical pulse

Sometimes a doctor wishes the patient's heart rate counted at the apex of the heart. This is called the **apical pulse**. The diaphragm of a stethoscope is placed over the apex of the heart. In an adult, it is usually about midway between the left nipple and the midline of the body. There are two sounds (lub-dub) with each beat. They must be counted as one beat and any additional beats counted and described on the patient's record.

For some patients, an apical-radial pulse will be requested by the doctor. Two nurses must work together in taking it. One nurse will use the stethoscope and count the apical pulse. The other nurse will count the radial pulse. They should agree upon the time of starting to count before beginning and count for a full minute using the

same watch. More beats may be heard at the heart apex than is felt at the pulse. The difference is called the pulse **deficit**. It is considered to be due to some of the heart beats being too weak to push enough blood into the arteries to be felt at the pulse site. It is an important finding when it occurs.

## Respiration

**Respiration** is the act or process of breathing and is a combination of two processes. **Inspiration** is breathing air into the lungs and expiration is breathing out or expelling air from the lungs. The terms **inhalation** and **exhalation** are also used for the two processes. Oxygen is taken into the lungs on inspiration and exchanged for carbon dioxide which leaves the lungs on expiration. Terms used to describe respirations include :

1. Eupnea — normal breathing.
2. Tachypnea — a breathing rate of more than 24 respirations per minute.
3. Bradypnea — less than 10 respirations per minute.
4. Apnea — absence of respirations.
5. Dyspnea — difficult or labored breathing.
6. Orthopnea — difficult breathing when lying down.
7. Hyperpnea — increased rate and depth of breathing due to lack of oxygen in the blood.
8. Hyperventilation — an increase in the rate and depth of respiration with an excess of carbon dioxide given off causing the  $\text{CO}_2$  level of the blood to fall.
9. Cheynes-Stokes respirations — a repeating pattern of irregular but rhythmic breathing followed by apnea, seen in some critically ill patients.



10. Kussmaul's respirations — An increased rate and depth of respirations with panting and long, grunting respirations. It is seen in patients with diabetic acidosis or with renal failure.

Respirations are observed for their **rate, depth and character**. All are important in assessing a patient's condition or progress.

### **Rate**

The rate and depth of respirations are controlled by the respiratory center located in the brain. They are influenced by age, activity, emotions, pain, fever, drugs and disease processes. The respiratory center is very sensitive to changes in the carbon dioxide level of the blood. Low levels of oxygen in the blood are also recognized quickly. The respiratory center stimulates the rate and depth of respirations according to the need of the body.

The normal respiration rate for a newborn varies between 35 and 50 respirations per minute. The rate gradually decreases until by the adult period the normal rate is 16 to 20 respirations per minute.

### **Depth**

The depth of respirations refers to the amount of air entering and leaving the lungs during respiration. In deep respiration, a large volume of air enters the lungs. In shallow respirations, only a small volume of air is involved. Because the depth of respirations may indicate a serious problem, it is important to observe and record this characteristic of respirations in patients.

### **Character**

By character of respiration is meant the aspects of breathing that are different from normal, effortless breathing. It includes the amount of effort required for breathing

and the sound of breathing. Additional effort used in **dyspnea** brings accessory muscles into use to help the costal muscles carry on the respiratory activity.

There is normally no sound with breathing. A partial obstruction may cause a whistling sound called **wheezing**. It is common in asthma. A **stridor** is a crowing sound on inspiration caused by an obstruction in the laryngeal area. It may occur in laryngitis or diphtheria. **Rales** are rattling sounds on inspiration due to secretions in the lungs.

**Rhonchus** is a wheezing sound produced in the bronchial tubes and heard via stethoscope.

**Crepitation** is the crackling sound heard via stethoscope in lung infections.

Respirations are usually observed and counted at the time of counting the pulse. Because respiration can be partially controlled, it is desirable that the patient be unaware that they are being counted. If there is any problem in seeing the chest rise and fall, the patient's arm is held across the chest which allows the nurse to feel the respirations. They are counted for 30 seconds when they are regular and for a full minute if irregular. The depth and character of the respirations are observed at the time of counting the rate.

### **Blood Pressure**

The amount of pressure exerted on the walls of the blood vessels is called **blood pressure**. There is pressure on the walls of both the veins and the arteries. However, the pressure in the veins is much less than in the arteries and is measured in a totally different way. Since the venous pressure is required less often it will not be discussed here. All reference will be to the arterial blood pressure which is very important in making a diagnosis and in determining the progress of many disease conditions.

Blood moves through the arteries in waves which makes possible two different measurements of pressure. The force of the blood coming from the ventricles as they contract and push the blood into the arteries produces the **systolic** pressure. The **diastolic** pressure is the amount of pressure on the arterial walls during the brief period the heart is at rest between contractions. The difference between the systolic and diastolic pressure is called the **pulse pressure**.

Blood pressure is controlled by 1) cardiac output, 2) the blood volume and 3) arterial resistance. By **cardiac output** is meant the amount of blood forced from the ventricles into the aorta with each contraction. The amount will be according to the strength of the contraction. The **blood volume** refers to the total amount of blood in the body which is normally about six liters. A hemorrhage will cause a decrease in blood pressure because of the decrease in blood volume. **Arterial resistance** is due to two factors, the elasticity of the artery walls and the size of the arterioles and capillaries. In the condition of arteriosclerosis, the walls of the arteries lose their ability to stretch. The systolic blood pressure will be elevated in persons who have the problem. Many factors can cause the arterioles and capillaries to become smaller in size (vasoconstriction) which causes an increase in blood pressure.

Blood pressure is influenced by a variety of factors. One is the age of the person. A newborn has a systolic pressure of only 40 to 70 mm of mercury (Hg). It gradually increases with age until in an adult the systolic pressure is normally between 110 and 140 mm Hg. The diastolic pressure in an adult is between 60 and 80 mm Hg. An elderly person may have a slightly higher blood pressure. Blood pressure above the normal range is called **hypertension**. When it is below the normal range, it is called **hypotension**.

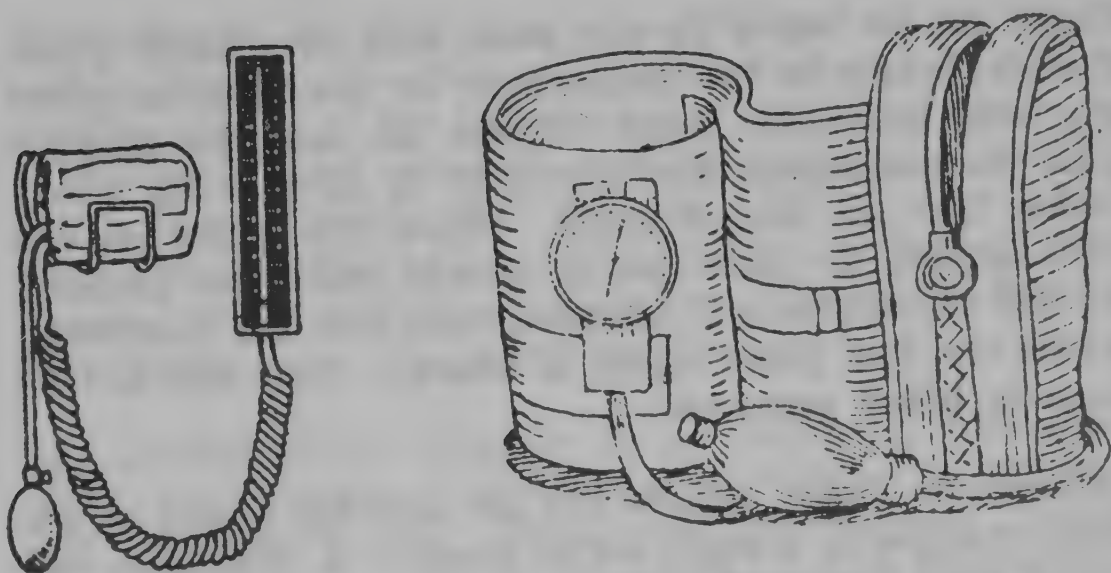
Activity increases the blood pressure. It should return to normal with rest. Emotions such as fear and anger



cause it to increase. Physical stress, including pain, causes an increase. However, severe pain can cause a decrease to the point of shock. Diseases of the circulatory or renal system may cause an increase in blood pressure. A number of drugs have an effect on the blood pressure.

The equipment needed for taking the blood pressure is a sphygmomanometer and a stethoscope. A sphygmomanometer is composed of a rubber bag called a bladder which is covered by non-stretching cloth (the cuff) to wrap around the arm. The bladder has two rubber tubes coming from it. One tube is attached to a rubber bulb that is used to fill the bladder with air. The other tube is attached to a manometer.

Fig. 10 — Sphygmomanometers



Mercury manometer connected to a wall

Aneroid manometer

There are two types manometers. The aneroid manometer has a round dial with a hand to indicate the blood pressure. The other type is a mercury manometer which is a glass tube with a bulb of mercury at the bottom and calibrations along the tube. When air is pumped into the bladder, the mercury rises in the manometer.

There are blood pressure cuffs for adults and a smaller size for infants and children. An incorrect reading would be obtained if an adult cuff were used to try to determine the blood pressure of a small child.

### **Technique of measuring the blood pressure**

To measure the blood pressure, the cuff is firmly and smoothly wrapped around the upper arm with the lower edge of the cuff about 2 cm above the antecubital space of the elbow. Palpate the brachial artery with the fingertips. Place the ear pieces of the stethoscope in the ears with the tips pointing forward. The tubes attached to the manometer and to the rubber air bulb should not touch each other as it could produce a rubbing sound through the stethoscope that would interfere with correctly hearing the pulse beat.

Close the air valve on the bulb with one hand, place the diaphragm of the stethoscope on the brachial pulse site with the other hand. Pump air into the bladder until the manometer mercury is 20 to 30 mm Hg above where the last sound heard. Open the valve on the bulb slightly to allow air to slowly leave the bladder. As the mercury slowly begins to fall, note the number at which the first pulse sound is heard. That will be the **Systolic blood pressure**.

Continue to slowly release the air until the sound of the pulse changes to a much softer sound. A little later the sound will completely disappear. There is disagreement as to whether the point of change in sound or the total disappearance of the sound should be used as the **diastolic blood pressure**. The leaders in each institution should decide which to use. All three readings are recorded in some institutions.

If there is uncertainty of the correct reading, wait two minutes and repeat the procedure on the same arm. Do not repeat more than one time as repeated blocking of



the flow of blood tends to increase the blood pressure. If there is uncertainty about a second reading, wait 15 to 30 minutes before taking it again. All air is pressed from the cuff when it is removed from the arm. The systolic and diastolic readings are recorded on the patient's chart.

### Summary

The body temperature is a balance between heat produced and heat lost. It normally remains fairly constant. The pulse rate varies more. The pulse is produced by the artery walls expanding each time the heart contracts and sends a fresh flow of blood into the arteries. The expansion of the artery walls (the pulse) can be felt at points in the body where an artery passes over a bone that is just under the skin. Counting the pulsations gives the pulse rate.

Respiration is the taking in of oxygen and giving off of carbon dioxide. Sensitive cells in the brain detect even a slight variation of the oxygen — carbon dioxide balance of the blood and stimulate breathing according to the body's requirements for oxygen. There is a close correlation of the heart rate and the respiratory rate because of the influence of oxygen. There are usually four heart beats for every respiration.

The arterial blood pressure is an important indication of the body's state of health and its response to internal and external forces. Prolonged hypertension causes permanent damage to the brain, the retina of the eye, the heart and the kidneys. The vital signs are taken so frequently in a hospital that it is easy to forget their value and importance. Record them immediately after taking to ensure accuracy.

### Additional Study Topics

1. New developments in thermometers and sphygmomanometers.



2. Emotions and the vital signs.
3. Hypothermia in surgical procedures.
4. Blood pressure measurement.

### **Learning Activities**

1. Practice taking vital signs on classmates.
2. Locate all the pulse sites on yourself or a classmate and count the pulse at each site.
3. Select three patients of different ages. Take the vital signs of each and compare.

## **CHAPTER 16**

### **FLUID BALANCE AND THERAPY**

#### **CHAPTER CONTENTS**

##### **Physiology**

**The role of fluid in the body**

**Normal fluid loss**

**Abnormal fluid loss**

**Excess body fluids**

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##### **Nursing responsibilities**

**Measuring and recording the fluid intake and output**

**Providing adequate fluids**

##### **Methods of giving fluids**

###### **Gavage**

###### **Intravenously**

**Indications for giving fluids intravenously**

**Types of solutions given**

**Personnel for giving infusions**

**Administration sets**

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**Technique of starting an infusion**

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**Infusion complications**

**Changing infusion bottles**

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**Nursing care during an infusion**

###### **Hypodermoclysis**

###### **Proctoclysis**

## **Blood transfusions**

**Whole blood**

**Blood components**

**Selection of blood donors**

**Transfusion reactions**

## **LEARNING OBJECTIVES**

- 1. Keeping accurate fluid intake and output records.**
- 2. Preparing an infusion set and assisting an authorized person to start it.**
- 3. Calculate the rate of flow for an indicated amount of fluid over a given period of time. Adjusting the rate of flow to the desired number of drops per minute.**
- 4. Changing infusion bottles.**
- 5. Changing infusion tubing.**
- 6. Providing all nursing care to patients receiving an intravenous infusion.**
- 7. Discontinuing an intravenous infusion.**
- 8. Recognizing complications and reactions to intravenous infusions and blood transfusions.**



## FLUID BALANCE AND THERAPY

Water is necessary to life and health. It is required in all body tissues. The body fluids, such as blood and cerebrospinal fluid, are almost all water with a very small amount of solid substance. In an infant, 75 to 80 percent of the body weight is water. The large percentage of water is needed because of a high metabolic rate associated with rapid growth. In an adult, about 60 percent of the body weight is water. It is slightly less in an older person.

Of the 60 percent of body weight in an adult that is fluid, 40 percent is in the cells throughout the body and is called **intracellular fluid**. The remaining 20 percent is **extracellular fluid**. It surrounds the cells and includes the blood, saliva, digestive juices and other secretions.

Water is needed for the many chemical reactions involved in digestion and other internal activities of the body. As part of the blood, it carries nutrients to the cells and waste substances away from the cells. There is a continuous loss of fluids in the form of urine, sweat, feces and moisture in the air exhaled from the lungs. It must be replaced to keep the correct balance of fluids for good body functioning. Fluids are normally replaced through the drinks and food we take.

The amount of fluid lost is affected by the weather, activity, rate of metabolism, fever, stress, surgery, certain diseases and drugs. This makes it necessary to watch the fluid balance of patients. A record for the intake and output of fluids is kept for many patients.

When the amount of fluid taken into the body equals the amount eliminated, fluid balance is maintained. Normally 900 to 1000 ml of fluid is lost daily through perspiration and respiration which may go up to 3000 ml

in hot weather. The amount of urine produced to remove waste products from the body must be a minimum of 600 ml daily and much more is preferred, 1500 ml being a good average amount. A decrease in body fluids is seen first in a decreased urine output.

The intake of fluids must be enough to balance the amount given off through the normal routes or by abnormal losses. Water is lost abnormally through vomiting, diarrhea, drainage from wounds, oozing from large burn areas and hemorrhaging. The loss may take place rapidly, as in hemorrhage, or it may take place slowly over a number of days, as in burns. When fluid is lost suddenly, the symptoms are those of shock which are cold, clammy skin, rapid pulse, a drop in blood pressure, restlessness and apprehensiveness. The fluid must be replaced promptly or the patient becomes unconscious and death results.

When there is slow dehydration, the face becomes flushed accompanied by an increase in body temperature. The urine output is decreased. There will be weight loss, thirst and loss of skin elasticity. Death eventually results unless fluids are given to restore the balance.

There is also an imbalance of body fluid when there is too much extracellular fluid surrounding the cells. This condition is called Oedema. This is usually due to retention of sodium chloride in the extravascular fluid compartments. The salt holds water, causing tissue Oedema. Therefore, reducing salt intake may decrease the Oedema. Other causes of fluid retention include inadequate venous return and overloading the vascular system with fluid. A dehydrated person may be given fluid too rapidly causing oedema of the eyelids and extremities to develop. It can also cause dyspnoea due to the fluid going into the lung tissue and causing pulmonary Oedema.

Electrolytes in the body fluid must also be kept in proper balance. They are lost when fluid is lost from the body, especially in vomiting and diarrhea. Electrolytes are chemicals that in water break down into positively and negatively charged particles called **ions**. The main electrolytes are sodium, chloride, potassium and calcium. Table salt (sodium chloride) is very important in maintaining the electrolyte balance since it provides both sodium and chloride ions.

### **Nursing responsibilities**

Nursing activities play an important role in maintaining fluid balance. Providing and encouraging oral fluids according to individual needs is invaluable in preventing dehydration. Accurate measuring and recording of all fluid intake and output, careful observation for signs of fluid imbalance and providing the doctor with all relevant information are nursing responsibilities that are vital to many patients.

Both the type and amount of fluid taken are important. Fruit juice, milk drinks and some other liquids contain electrolytes and nutrients as well as water. Gelatin, soups and ice cream are included in recording fluid intake. All fluids are measured and recorded in milliliters. Some patients can help keep their record. They record the amount as a cup or part of a cup which the nurse changes into milliliters. Markings may be put on the outside of the cup or glass used by the patient to help him keep his own record.

All patients, who are having their intake and output recorded, pass urine into a bedpan or urinal. The nurse measures it by pouring it into a container having milliliter markings. The time, amount and any abnormal appearance or odor is recorded each time urine is voided. If the patient has a catheter, the urine is emptied from the collecting bottle at designated times and amount recorded.



Other fluid losses to be measured and recorded are vomitus, liquid stools and drainage from any part of the body. Perspiration cannot be measured, but if it is visible or profuse, it is recorded along with the length of time the patient continued the excessive perspiration.

A special intake and output record should have space on one side for recording the time, type and amount of fluid excreted. On the other side the time, type and amount of fluid taken is recorded. The patient's name and room or bed number is written on it. The form is kept at the patient's bedside, along with a pen, for the nursing staff and patient's convenience in recording. The nurse, assigned to the patient each shift, totals both the intake and the output and records it on the patient's chart at the end of the shift.

It is the nurse's responsibility to know the amount of fluid the doctor wishes the patient to have during 24 hours. Sometimes the doctor indicates the minimum amount to be given. When he wants the fluids restricted, he states the maximum amount to be given. If the amount of fluid to be taken during the waking hours is divided and evenly spaced, it is easier for the patient to take the required amount. When on restricted fluids, spacing them throughout the day allows the patient to frequently satisfy his thirst and not have to go for a prolonged time without fluids.

### **Methods of giving fluids**

It is always preferable for fluids to be taken by mouth. However, when the patient cannot take fluids orally, there are several other routes by which it can be given. They are 1) by gavage, 2) intravenously, 3) hypodermoclysis and 4) proctorlysis.

### **Gavage feedings**

Gavage liquid feedings, as discussed in chapter nine, are very helpful for some patients who are unconscious or

have problems of the mouth or throat. Adequate nutrients and water can be provided by this method for a long period if necessary. An important advantage is that non-sterile equipment and feedings are used.

### **Intravenous fluids**

The intravenous route of supplying fluids is used when 1) insufficient fluids or nothing can be taken orally, 2) a quick supply of fluids or electrolytes is needed, 3) blood or blood products is required or 4) medication is required that cannot be given any other way.

A normal saline solution is frequently given intravenously. It is a 0.9 percent sodium chloride in water solution which is of the same osmotic pressure as most body fluids. Glucose may be added to the normal saline solution or to distilled water to make a 5 percent solution. One liter of 5 percent glucose solution contains 200 calories. Potassium, calcium and other electrolytes are sometimes added to normal saline. At times, amino acids and vitamins are added for their nutritive value. Solutions containing different nutrients or electrolytes are available in sterile bottles or bags ready to give.

An alkalizing solution, usually containing sodium lactate or sodium carbonate, is given when there is a state of acidosis in the body. It may occur in case of cardiac arrest, diabetic coma and other problems. The opposite state of the body, alkalosis, is treated with an acidifying solution, often an ammonium chloride solution.

Whole blood is given following severe hemorrhage, shock, or in preparation for surgery if serious blood loss is possible. It may be given during and following surgery. It is given in treating certain anemias. Blood products that may be given include plasma, serum, red blood cells, and platelets. Plasma is preferred in treating burns because large amounts of serum is drawn from the blood vessels and lost by oozing from the burn area.

Packed red cells are indicated when the blood volume is sufficient, but the number of red blood cells is decreased. Platelets are given when there is a deficiency of them in the blood.

### **Personnel for administering infusions**

Managing intravenous therapy is a team effort. It is carried out only on specific orders from a doctor. The person who starts an intravenous infusion may be a doctor or a nurse. Each hospital designates who is permitted to do the procedure. Only doctors may be allowed to start them. Sometimes, all staff nurses must be able to start them. In some places, a special team of nurses are trained to start all infusions, add medications and be available to help with problems that arise. Laboratory or other technicians may be given the responsibility. Regardless of who starts the infusion, it is a nursing responsibility to inform the patient that it is to be done, give explanations to remove apprehension and answer questions he asks. The nursing staff is responsible to observe for complications and give nursing care required during the infusion.

### **Administration sets**

Intravenous solutions and administration sets are prepared by many pharmaceutical companies so they are sterile and ready for use. A wide variety of fluids are available. The bottles of solution have a rubber stopper covered with a metal disc and sealed with a metal cover. The cover and seals are not to be removed until ready to start the infusion.

The administration set has an insertion spike with an air vent, a drip chamber, plastic tubing with a control clamp, and a needle adapter with a cover over the end. Administration sets are designed to be used with a certain brand of solutions which causes that some do not have an air vent on the insertion spike because a separate vent is



provided in the bottle. The drip chamber is made to produce a specific size drop. The size usually used for glucose or normal saline solutions will release 15 or 20 drops per milliliter of solution. For giving blood, the size that releases 10 drops per milliliter is used. Sets designed for giving infusions to infants and children, release 60 drops per milliliter (a microdrip set). The packet should indicate the number of drops per milliliter that the set releases.

The needle for giving the infusion may be with the administration set, but is usually in a separate packet. It is made of stainless steel or plastic. There are different sizes. For an adult, a number 21 short bevel needle is usually used except for giving blood when a larger needle is required because of the viscosity of the blood. For continuing infusions over a long period of time, a plastic intracatheter (Intracath) may be used.

Two bottles of solution can be attached to the tubing at the same time by using a Y-tubing connection. The solutions may be given at the same time or alternately. Medication is often attached in this way.

### Infusion site

In an adult, the basilic and median veins of the anterior surface of the elbow are usually the ones most easily found for doing a venepuncture. However, it is recommended that they not be used for giving an infusion. It is better to preserve them for laboratory personnel to use for taking blood samples. Also, if the basilic or median veins are used, the elbow will need to be kept extended with a splint and soon becomes very uncomfortable. It should not be kept immobilized for the long periods that fluids must sometimes be given. It is more satisfactory to use one of the veins of the lower arm or the back of the hand. The ulna and radius serve as a natural splint to the forearm. The patient has much more freedom of movement. If a splint does need to be

used, it should not interfere with circulation or cause discomfort. There are good veins of the feet and lower legs that can be used for giving an infusion. However, it is believed there is more possibility of phlebitis or thrombosis developing from an infusion in the feet or legs.

Small babies and infants have small veins. It is preferred to use the veins of the scalp to give an infusion to them. The veins of the back of the hand or a foot may be used in a large baby. The hands of infants must be restrained to prevent their dislodging the needle. Sandbags or rolls are kept on either side of the head to prevent movement when a scalp vein is used.

### **Technique of starting an intravenous infusion**

The doctor's order is checked to make sure of the right fluid and the right patient. With all the equipment at the bedside, the solution bottle and tubing are made ready. The metal covering of the bottle is removed, then the protective seal is taken away with care to prevent contamination of the top of the bottle. The rubber stopper will have one or two holes, depending on whether it has a separate air vent. The insertion spike on top of the drip chamber should have its protective covering removed and the spike inserted into the bottle opening without contaminating it.

Clamp the tubing and hang the bottle on the intravenous stand or hook. Squeeze the drip chamber until it is one-third filled with solution. Remove the protective covering from the end of the tubing, open the clamp and allow fluid to run through into a container until all air is removed. Clamp the tubing, replace the end covering and hang the tubing on the stand. It must be done carefully to prevent contamination of the end of the tubing. Prepare strips of adhesive plaster (tape) to hold the needle in place.

Select the site for inserting the needle into the vein. Apply a tourniquet 15 to 20 cm (6 to 8 inches) above the site. Instead of a tourniquet, a sphygmomanometer may be used and the mercury pumped to the 100 mm level. The pressure can be easily released without dislodging the needle. The hands should not be used to block venous circulation because of the danger of damaging the veins and other tissues. Massage the occluded vein and ask the patient to rapidly close and open his fist. If the veins do not become distended, the tourniquet is removed and heat applied to the entire extremity for 10 to 15 minutes.

When the veins are sufficiently distended, cleanse the skin with an antiseptic solution. Place the thumb below the insertion site and pull the skin taut. Hold the needle at a 30 degree angle with the bevel up. Pierce the skin at the side of the vein. After the needle has gone through the skin, lower it so it is parallel with the skin. Move it along the vein and in through the side wall. Blood will come into the needle when it is in the vein. Release the tourniquet and attach the tubing to the needle. Open the clamp of the tubing to allow the fluid to begin dripping.

The strips of adhesive tape are applied to hold the needle firmly in place. A piece of gauze or a cotton ball may be needed under the needle to hold it in position. A small partial loop of tubing is formed and taped on the arm near the needle to prevent strain and pull on the needle.

### **Regulating the flow of solution**

Nurses are responsible for keeping the infusion dripping at a suitable rate. If it is allowed to flow too rapidly, there is an overloading of the circulatory system with serious problems to the heart and the pulmonary system. If the rate is too slow, the patient will not receive maximum benefit from it.



The doctor orders the length of time in which the infusion is to be given. Except when rapid fluid replacement is necessary, 1000 ml is given in an 8 to 12 hour period. To calculate the rate at which the infusion is to be given, the amount per hour is determined. If 1000 ml is to be given in 8 hours, 125 ml will need to be given each hour. A marker is put on the bottle to indicate the level it should be every hour.

To adjust the rate of flow correctly, it is necessary to know the number of drops to be allowed per minute. Since the infusion sets are made to deliver a specified number of drops per milliliter, it is easy to calculate the number of drops needed per minute to have the infusion run for a certain length of time. The formula to be used is :

Total infusion volume x drops per ml.

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\_\_\_\_\_ = drops per minute  
Total infusion time in minutes

If 1000 ml is to be given in 8 hours (480 minutes) and the infusion set delivers 20 drops per ml, the calculation will be :

$$\frac{1000 \times 20}{480} = 41 \text{ drops per minute}$$

When the number of drops per minute is known, the rate of flow is controlled by adjusting the clamp on the tubing. The number of drops is counted using a watch. The calculation of the drops per minute is done before the infusion is started as part of the preparation.

A slowing of the rate of flow must be checked to determine the cause. Make sure no part of the patient's body is on the tubing and that there are no kinks. Sometimes the flow can be increased by changing the

position of the arm or by elevating it on a pillow. Raising the infusion bottle a few centimeters increases the rate of flow.

### **Infusion complications**

The main complications that develop from an intravenous infusion are infiltration, phlebitis, embolism and overload. **Infiltration** means the fluid is going into the subcutaneous tissues around the vein. It is due to the needle being dislodged from the vein or to seeping from around a plastic needle that has been in place for a prolonged period. There is swelling, pallor and coldness of the tissues at the site. The patient feels pain and the rate of flow decreases. The infusion must be discontinued, reported to the doctor and restarted in another vein if ordered.

**Phlebitis** is an inflammation of the vein. It is more common when plastic needles are used and when electrolytes, especially potassium, or antibiotics are in the solution. The signs of phlebitis are swelling, redness, warmth and pain at the site. The problem is reported, the infusion discontinued and warm, moist packs applied to the site to relieve the discomfort. Sometimes, if only a small amount of fluid remains to be given, the doctor will order that the rate of flow be slowed and the site carefully observed for any increase of symptoms.

An **air embolism** is dangerous. Though a fairly large amount of air in the veins is necessary to cause death, enough can get in through careless handling of an infusion to produce the problem. Care in expelling all air from the tubing when starting an infusion or when changing the bottles of fluid will prevent an air embolism. An embolism may also develop from phlebitis producing a thrombus (blood clot in the vein) and a portion of it breaking loose. As it travels through the blood vessels, it becomes lodged. If it becomes lodged

in the lungs, it is called a **pulmonary embolism** which is often fatal.

An **overload** of the circulatory system results from a patient being given too much fluid. The symptoms of an overload are due to fluid being forced from the blood vessels into the surrounding tissues. These include bounding pulse, engorged peripheral veins, hoarseness, dyspnoea, cough or pulmonary rales. It becomes noticeable first in the lungs due to pulmonary oedema causing coughing, shortness of breath, increased rate of respiration and cyanosis. The infusion is greatly slowed or stopped and the doctor informed. The patient will be able to breathe easier in a sitting position.

### **Changing infusion bottles**

When more than one bottle of fluid is required, the nurse is responsible to change the bottles when the solution in the first bottle reaches the neck of the bottle. The bottle is never allowed to completely empty because of the danger of an air embolism in the veins. The new bottle is prepared by removing the cover and protective seal. The tubing is clamped, the insertion spike removed from the empty bottle and quickly inserted into the new bottle. The new bottle is hung on the stand, the clamp on the tubing released and adjusted to the desired rate of flow.

The kind and amount of fluid given from the completed bottle and the kind and amount in the new bottle are recorded on the patient's chart by the nurse changing the bottles.

### **Changing the infusion tubing**

There are times when an infusion is kept going constantly for a number of days. When this is done, some medical personnel believe the tubing should be changed every 24 hours, others think every 48 hours is satisfactory.



Whatever the frequency, it should be clear to all the staff. It is best done when changing bottles by attaching a new administration set to the new bottle and making the change at the needle. Plastic needles or intracaths should also be changed every 24 to 48 hours.

### **Discontinuing an intravenous infusion**

To discontinue an infusion, the tubing is clamped, the tape holding the needle is loosened from the arm and the needle smoothly withdrawn. A dry, sterile cotton ball or piece of gauze is immediately placed over the site and pressure applied for 2 to 3 minutes. A bandaid or small dressing is put over the area. It is removed after a few hours or the next day.

### **Nursing care during an intravenous infusion**

The patient receiving an intravenous infusion must have daily hygiene and other nursing needs met. All nursing care can be done while an infusion is in place as long as caution is exercised to prevent dislodging the needle. When the gown is removed, the patient must be kept covered to avoid exposure. To remove the gown, take it all off except from the arm having the infusion. Remove the fluid bottle from the stand. Hold the bottle in one hand and with the other hand, gently pull the gown sleeve down the patients arm, over the tubing and the bottle. Replace the bottle on the stand until ready to redress the patient.

When care has been completed and it is time to put a fresh gown on the patient, the appropriate sleeve is put over the bottle first, then over the tubing and on the arm. The rest of the gown is then put on the patient to complete dressing him.

A patient with an intravenous infusion is bathed the same as any other patient. Wash gently in the area of the needle. Do not allow the adhesive tape holding the

needle to become wet and loose. Dry the skin by gently patting it. Keep the bed clothing and towel from the tubing to avoid pulling on it.

The patient may need to be fed if the infusion is in his right arm. If the infusion is in the left arm, the patient is encouraged to feed himself if possible. Place all articles he will need within easy reach and adjust the bed to be convenient.

When walking is not contraindicated, a patient with an infusion is helped to walk with an assistant to hold the bottle on a portable stand. A sling is put on the arm with the infusion, to give support. Patients, who are able, may sit in a chair while receiving an infusion.

The patient and the infusion are checked every 30 minutes or more frequently for the following :

1. The number of drops flowing per minute and adjust if necessary.
2. The level of fluid in the bottle. Add more fluid or discontinue the infusion as required.
3. Swelling at the needle site.
4. Reaction of the patient to the fluid with symptoms such as flushing of the skin, itching, blanching of the skin, twitching, increased respiration or pulse rate.

If a reaction to the fluid is suspected, it is reported to the charge nurse and doctor at once.

### **Hypodermoclysis**

An alternative method of giving fluids, if the oral and intravenous routes cannot be used, is to give it into the subcutaneous tissue. The method is known as **hypoder-**

**moclysis.** The anterior area of the thighs, the lower chest area, the subscapular region, or the abdominal wall are sites used. By using a Y-connector, two needles are inserted, one on the right and the other on the left side of the body at the site selected. Normal saline is the solution given by this method as other types of solutions are irritating to the tissues. Good, sterile technique is necessary when giving fluids by this method in order to prevent subcutaneous infection. It is an uncomfortable procedure for the patient. Therefore, it is not used unless other routes are impractical.

### **Proctoclysis**

Giving fluid through a catheter or small rectal tube into the colon is called a **proctoclysis**. The colon will absorb water and some salts. Normal saline is given by a slow, continuous drip. A limited amount can be given because absorption is slow. This method is not often used because of the limits in amount and type of fluid that can be given. However, it is very useful in some situations. An advantage is that sterility is not necessary which makes it useful in some home or emergency situations.

### **Blood Transfusions**

The giving of blood or blood products from one person to another person is called a **transfusion**. Whole blood is given more frequently than blood products. Plasma, serum, red cells, and platelets are the most common components of blood that are separated from the whole blood and given for the treatment of particular medical problems. There are a number of less commonly required components that can be obtained if needed.

Blood transfusions are given when there is serious blood loss and in the treatment of some cases of anemia. Plasma is given to increase blood volume when serum is lost, but not the erythrocytes as happens in burns. Packed red cells have 80 percent of the plasma removed.



They are used when the blood volume is sufficient, but there is a deficiency of red cells as in anemia.

A blood transfusion is of great benefit, and often life-saving, to the person receiving it. However, great care is necessary in selecting blood donors. There are serious diseases that can be transmitted in the blood from a person who has the organism, but no symptoms. The diseases are syphilis, auto-immune deficiency syndrome (AIDS), malaria and hepatitis. Fortunately there are tests to determine the presence of the organisms of the two most serious, syphilis and AIDS. A careful medical history should reveal if the donor has had malaria or hepatitis. A person, who has had either of these four diseases, should not be accepted as a blood donor. If blood is obtained from a blood bank, it should be from one that has a high standard of selecting the donors and processing the blood.

There are four main groups of blood according to certain proteins found in the erythrocytes. The groups are A, B, AB and O. Another substance called the Rhesus (Rh) factor is present in the blood of some people. They are referred to as **Rh positive**. Those who do not have the substance in their blood are referred to as **Rh negative**. The patient's (recipient's) blood must always be cross-matched with the donor blood to make sure the grouping and the Rh factor are compatible. When the donor blood is not compatible with the recipient's blood, a condition known as a **hemolytic reaction** occurs.

In a hemolytic reaction there is an agglutination (sticking together) of the erythrocytes which blocks the capillaries, causes the erythrocytes to disintegrate and release hemoglobin into the blood. It eventually gets into the kidney tubules. Their blockage produces kidney failure. Since this is such a serious problem, all patients should be watched very closely for the first ten minutes of

a blood transfusion for signs of a hemolytic reaction which occurs very soon after the transfusion is started. The first symptoms are chills, fever, headache and back pain which quickly goes on to dyspnea, cyanosis, chest pain and oliguria

The blood is discontinued immediately at the first sign and the doctor informed of the reaction. The infusion can be maintained with a normal saline or a 5 percent glucose solution. The patient's life can be saved, but it is a very great emergency and quick, efficient action is necessary.,

Another serious problem results from bacterial contamination of the blood or of the administration set. It is known as **pyrogenic** or **febrile reaction**. The symptoms are fever, shaking chills, warm flushed skin, headache, back pain and nausea which progresses on to hematemesis, diarrhea and mental confusion or delirium. The symptoms usually take a little longer to develop than a hemolytic reaction. Signs usually appear during the first half hour of the transfusion.

The transfusion is stopped immediately and the doctor notified. Normal saline or 5 percent glucose is used to maintain the infusion. Antibiotics and corticosteroids are given to treat the problem. Treatment must be started immediately because the bacteria are in the blood and will multiply quickly as well as be carried to all parts of the body. A pyrogenic reaction may occur from giving other types of intravenous fluids if there has been bacterial contamination.

Sensitivity to the white blood cells or platelets of the donor may produce the same febrile reaction. It is not as severe as the reaction to bacterial contamination, but must be treated immediately according to the doctor's orders.

There is a milder allergic reaction possible that is believed to be due to allergenic substances (food, drugs or antibodies) in the donor's blood. The symptoms are urticaria, occasional wheezing, joint pains, generalized itching and nasal congestion which may go on to severe dyspnea and circulatory collapse. The first signs must be promptly reported to the doctor. The transfusion is slowed and the doctor's orders followed as soon as received. In severe reactions, the transfusion is stopped and normal saline or 5 percent glucose given until the doctor's orders are received.

Blood must be carefully checked to make sure it is the right blood for the patient, especially if more than one patient is receiving blood. Sterile administration sets and technique must be used in starting the transfusion. If any part of the equipment becomes accidentally contaminated, it must be discarded and new, sterile equipment obtained. The patient must be closely observed for any type of reaction to the transfusion. If there are signs of a reaction, immediate action is taken to stop the transfusion and inform the doctor.

### **Summary**

A patient's fluid balance may be disturbed by a number of factors including the disease for which he is admitted. It is, therefore, necessary to be observant for signs of dehydration or edema in all patients. A carefully kept record of all fluid taken and excreted is of invaluable help to a doctor in treating a patient.

When patients cannot take fluids by mouth, there are other methods of supplying a sufficient amount. Gavage, intravenous infusion, hypodermoclysis and proctoclysis are ways by which fluids may be given. The most suitable method for the patient and the circumstances is selected and ordered by the doctor. Intravenous infusions are widely used in hospitals when oral fluids are contraindicated.



Sterile technique is a necessity in giving an infusion. The infusion rate of flow must be carefully calculated and adjusted. The patient is checked frequently for complications, the amount of fluid remaining in the bottle and the rate of flow. Additional fluid, with a changing of the bottles, is added as necessary. The infusion is discontinued immediately when the solution reaches the neck of the infusion bottle.

The personal hygiene needs of patients continue to require attention during an infusion. In most cases the patient will require more assistance than usual from the nursing staff. Exercise and activity for the patient is continued as much as possible.

### **Additional Study Topics**

1. The role of fluids and electrolytes in the body.
2. Intravenous infusions and phlebitis.
3. Who should administer intravenous infusions ?
4. Problems arising from the infiltration of intravenous fluids into the tissues.

### **Learning Activities**

1. Measure and record the fluid intake and output of a patient for 8 hours under the supervision of a senior nurse.
2. Obtain an infusion set. Identify each part and tell its purpose.
3. Select two patients who are to receive an intravenous infusion. Calculate the rate of flow for each patient.

## **CHAPTER 17**

### **CARE OF THE SURGICAL PATIENT**

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**Thirst**

**Abdominal distention**

**Urinary problems**

**Retention**

**LEARNING OBJECTIVES**

1. Recognition of potential risk factors of individual patients.
2. Pre-operative teaching of the patient and family including leg, coughing and deep breathing exercises.
3. Skin preparation of the appropriate area.
4. Preparation of the post-operative unit for receiving the patient.
5. Maintaining an open air way in the patient.
6. Recognition from the vital signs of early symptoms of shock in a post-operative patient.



# CARE OF THE SURGICAL PATIENT

## Pre-Operative Nursing Care

Surgery is classified in different ways. When it is classified according to need, it is called **optional, elective, urgent** or **emergency** surgery. **Optional** surgery is a procedure that is not necessary for good health and activity, but something the patient wishes to have done, such as cosmetic surgery, to improve his appearance. **Elective** surgery is for a problem that does affect the well-being of the person, but is not immediately dangerous. The patient and doctor select a time that is convenient for both. **Urgent** surgery is necessary and cannot be delayed long, but it is not an emergency. **Emergency** surgery is for a problem that is threatening the life of the patient and must be done immediately in an effort to save life.

Terms that describe the reason for doing surgery include :

**Diagnostic surgery** — to determine or confirm a diagnosis.

**Exploratory surgery** — to determine the location and extent of disease, establish a diagnosis and correct the problem.

**Reconstructive surgery** — for restoration of a function or appearance.

**Constructive surgery** — Repair of a congenital malformation e.g. harelip.

When a doctor decides that surgery is needed by a patient, he informs the patient and family of the necessity of it along with the benefits it is expected to produce and the risks involved. The patient and family are free to accept or refuse the surgery. If they wish to accept the surgery, they must sign a **consent form** giving the

surgeon permission to do the surgery. The form is a legal document to be carefully kept along with the rest of the patient's medical record.

### **Surgical risk factors**

All surgical procedures carry a risk to the patient. Pre-operative care includes recognizing the factors in each patient that add to the risk and giving care aimed at reducing the dangers. Surgical risk is affected by 1) age, 2) nutritional state, 3) fluid and electrolyte balance, 4) general health, 5) medications being taken, and 6) mental health including attitudes.

Very young babies and elderly persons are greater risks during surgical procedures than those in between. Babies are a risk because of incomplete development of some of the body systems. The elderly patient is more likely to have poor circulation, limited heart function, poor nutrition and limited energy.

Both obesity and malnutrition present problems in a surgical patient. Obese patients are likely to have an overworked heart and hypertension. Incisions of fatty tissue are more difficult to suture and are more prone to infection. Patients who are malnourished may be deficient in protein, vitamins, calcium and iron which are necessary for blood clotting, wound and tissue healing.

Electrolyte imbalance is associated with dehydration which may be due to heavy perspiration, diarrhea or some other excessive loss of body fluids. It can also result from an inadequate intake of fluids. It is important to have a balance of calcium, magnesium, potassium and hydrogen ions during surgery for good functioning of all organs.

The general health of a patient affects his ability to tolerate surgery and recover without complications. Upper respiratory infections make the use of general

anesthetics a problem. Cardio-vascular disease increases the risks of surgery. Good liver function is necessary in the healing process and for the detoxification of medicines. Unless well controlled, diabetes mellitus predisposes to infection and poor healing of the tissues. Smoking irritates the lungs and complicates the use of general anesthetics. It should be discouraged before surgery. Alcohol has many chemical effects on the body altering the action of the nervous system and other parts of the body. It greatly affects the patient's reaction to surgery and to medications used before, during and after surgery.

Medications the patient is taking must be especially considered in preparation for surgery. Anticoagulants decrease clotting time and cause bleeding. Tranquilizers reduce the blood pressure and contribute to shock. Depressants (including alcohol) decrease central nervous system response. Some antibiotics are incompatible with anesthetics producing untoward reactions. Diuretics affect electrolyte balance producing deficiencies especially of potassium.

Emotional health and attitudes about surgery have a definite relation to the outcome patients, who are relaxed about the surgery and hopeful of the outcome, are more likely to have an uncomplicated, rapid recovery. Reducing the patient's anxieties is an important part of pre-operative care. It is often not the thoughts of surgery that produce anxiety, but problems of finance, family dependents, work, or the need to change plans for the future. There may be a fear of pain and body changes resulting from the surgery. A nurse comforts and helps the patient by being a sympathetic listener. The nurse is in a position to correct wrong ideas the patient may have regarding his surgery or the outcome. Her caring attitude, her explanations, and her attention to all his physical needs encourage the patient to have increased confidence in the surgeon and the hospital staff.



### Pre-operative instruction

With urgent and emergency surgery, there is often very little opportunity to give instructions to the patient or the family. Of greatest importance is reassuring them while doing the physical preparation. Patients, who are hospitalized for some time before surgery, provide an opportunity to prepare them for co-operating in their post-operative recovery. It has been found that pre-operative teaching has the following benefits :

1. Patients are more at ease about having the surgery.
2. Patients experience less post-operative pain and discomfort.
3. There are fewer post-operative complications.
4. The hospital stay and convalescent period are shorter.

The patient is instructed how to turn and move in bed after the surgery and how to get out of bed and walk. Doing it pre-operatively enables the patient to do it with less apprehension post-operatively. Activity improves circulation, stimulates respiration and decreases accumulation of gas in the intestines.

Leg exercises that increase venous circulation and help prevent thrombophlebitis, are taught and practiced before surgery. Thrombophlebitis is dangerous because an embolus may break away from a thrombus and be carried to the heart, brain or lungs where it becomes lodged causing a serious problem or death. The leg exercises relax the quadriceps and gastrocnemius muscles. They consist of :

1. Alternate dorsiflexion and plantar flexion of the feet.
2. Move the toes in a circle.

3. Flex the knee, raise the foot, hold a few seconds, then extend the knee and lower the foot to the bed.
4. Press the back of the knees against the bed.

The exercises are started as soon after surgery as the patient is able to do them. Each exercise is done five times with each leg and repeated every 3 to 5 hours. Other exercises are sometimes indicated.

Coughing and deep breathing exercises are taught because they are helpful to remove mucus and get air into all areas of the lungs. It aids in preventing lung infections. The patient lies in a Fowler's or lateral position unless contraindicated. Patients who have had a hernia repair, eye or brain surgery, must not do the coughing exercise because of the increased pressure coughing produces in those parts of the body. Deep breathing is done following all types of surgery. Coughing and deep breathing exercises should be done 3 or 4 times daily or according to the patient's condition. To carry out the exercises :

1. Splint the operated area with a hand placed firmly on each side of the incision.
2. The patient inhales deeply, then gives 2 or 3 hacking coughs while exhaling. The patient should keep his mouth open and his tongue out for the best results.
3. The patient takes a deep breath after coughing.
4. Repeat at least three times or until mucus is expectorated.

### **Skin preparation**

The skin is a protective covering of the body to keep dirt, microorganisms and other foreign objects from

entering the underlying tissues. When surgery is performed through an incision of the skin, every attempt must be made to prevent micro-organisms from entering the body. The skin of the operative area is given special preparation in order to prevent post-operative infection. The preparation procedure is done to remove dirt, oils and microorganisms and prevent the growth of microorganisms remaining on the skin. The skin should not be damaged by being broken or irritated during the procedure.

The preparation of the operative area is done after the patient has had a bath. He takes his own bath if he is able, otherwise the nurse gives a complete bath. A non-irritating antiseptic soap is used if available.

The time of doing the skin preparation is according to hospital routine and the surgeon's wishes. Many hospitals follow the practice of having it done the evening before surgery. Some hospitals and surgeons prefer that it be done on the morning of surgery because of studies that have shown that fewer infections develop in patients whose skin preparation was done near the time of surgery. Hair is stimulated to grow when it is shaved. The nearer the time of surgery it is shaved, the less will be the growth of hair. Large numbers of microorganisms are found on hair, so the less hair there is, the fewer the microorganisms.

The equipment for shaving the operative area includes, 1) a razor, 2) soap and warm water, 3) gauze, 4) water for rinsing, and 5) a container for waste. Antiseptic soap is preferable as it destroys a greater number of microorganisms than ordinary soap. However, it is not used if it irritates the skin. The procedure is not a sterile one, but sterile equipment is used to prevent introduction of additional bacteria.

The procedure is done in private after checking the doctor's order. Good lighting is essential.



1. Expose the area to be shaved and drape the patient. .
2. Provide protection to the bed.
3. Use the warm water and soap to make a good lather on a small area of skin.
4. Shave the area, holding the razor at a  $30^{\circ}$  to  $40^{\circ}$  angle while pulling the skin taut to avoid making small cuts in it.
5. Rinse the razor frequently to remove hairs. Wipe loose hairs from the skin.
6. Shave the entire area, then check carefully to make sure all hair is removed.
7. If the umbilicus or the ears are included in the preparation area, clean the orifice with an applicator. If the fingers or toes are included, clean well under the nails.
8. Rinse the area with clean, warm water.
9. Dry the skin gently.

Some surgeons want the prepared area covered by a sterile dressing. If it is required, the nurse puts on sterile gloves after completing the shaving. Rinse the area with sterile water and sterile gauze. Change the gauze after each stroke while rinsing the skin. Cleanse with an antiseptic. Allow it to dry on the skin. Cover the area with one or more sterile towels. Hold the towels in place with adhesive tape or a bandage.

The area shaved is always larger than the incision. There are recommended areas to be prepared for different types of surgery.

## **Head surgery**

The entire head is shaved above the eyebrows over the top of the head, the ears and the entire neck both anterior and posterior. Long hair is cut with a scissors first, wrapped in paper or cloth to prevent tangles and given to the patient or family. The eyebrows are not shaved. The face of a man is shaved, but not the face of a woman or child. The shaving is sometimes done in the operating room after the patient has been given anesthesia. If it is done in the patient's room, the head is covered by a towel or suitable cloth.

## **Lateral neck surgery**

The operative side is prepared from the spine around the anterior neck to the opposite shoulder from a line level with the scapula to the top of the ear. Around the front, it extends from a line across the midsternum up to the mandible.

## **Chest surgery**

The extent of the preparation area is dependent on where the incision is to be made. For a lateral incision, the area includes from the anterior midline to the posterior midline and from the neck to the level of the last rib. Included is the arm on the operative side to the middle of the forearm. Sometimes the surgeon will order the entire chest and back to be prepared.

If the incision is to be made in the area of the sternum, the skin is prepared from the neck to the pubis and to the mid-axillary line on each side.

## **Abdominal surgery**

The area from the nipple line to the pubis and laterally to the mid-axillary line on each side is prepared when there is to be an abdominal incision.

**Cervical spine surgery**

The upper back, from a line level with the ears, over the shoulders, down to the waist, and to the mid-axillary line on each side is prepared when there is to be surgery of the cervical spine.

**Lumbar spine surgery**

When the surgery is in the lumbar area, the preparation includes the back from the level of the axilla to the mid-gluteal level of the buttocks and to the mid-axillary line on each side.

**Perineal surgery**

The preparation area for perineal surgery is from above the pubic bone, down the pubis, vulva and to just above the anus. The inner, upper third of the thighs are included.

**Rectal surgery**

For surgery of the rectum, preparation is from a line across the back, level with the iliac crest, over the buttocks and the upper third of the inner thighs and laterally to the midline on each side.

**Hand and forearm surgery**

The entire arm, from the axilla including the fingertips, is prepared.

**Upper leg surgery**

Prepare the entire leg, including the foot and toes, and extending upward over the buttocks posteriorly, and over the pubis to the umbilicus anteriorly.

**Lower leg surgery**

Preparation is done from the mid-thigh down the leg, the foot and the toes for surgery of the lower leg.



**Nursing activities the evening before surgery**

Activities which are carried out the evening before surgery in order to allow both patient and staff to approach the time of surgery in a relaxed attitude include :

1. Check if the consent form is signed. If not, get it signed.
2. Make sure all x-rays and laboratory tests have been done and the results are in the proper place on the patient's chart.
3. Check and record the vital signs
4. Attend to personal hygiene needs.
5. Give a light evening meal if permitted.
6. Withhold food and oral fluids 6 to 8 hours before surgery.
7. Give a cleansing enema if required.
8. Do skin preparation unless the surgeon prefers it to be done later.
9. Give bedtime medication — usually a sedative for a good night's rest.

**Nursing activities the morning of surgery**

It is advisable to have a list of things to be done for the patient before surgery and check each item off as it is done. There will be variations according to the surgical procedure and the patient. In general, the following is done :

1. Give a bath, if not done the previous evening.
2. Give oral hygiene.
3. Comb hair. Remove metal pins or clips. Braid long hair.

4. Remove patient's personal clothing and dress in a hospital gown.
5. Remove dentures, eye glasses, artificial limbs or braces. Send to the operating room separately if required.
6. Remove cosmetics or nail polish to enable the anesthetist to see the skin color clearly.
7. Carry out special orders e.g. catheterization, naso-gastric tube insertion.
8. Check vital signs.
9. Give jewelry and other valuables to the family or lock in a safe place.
10. Give pre-operative medication at the designated time. The patient is to be in bed and undisturbed after the medication is given.
11. Make sure records are up-to-date and in correct order for operating room personnel to use.
12. Positively identify the patient with the operating room staff before transferring him to the stretcher to be taken for surgery.
13. Send chart and x-rays with the patient.

### **Post-Operative Nursing Care**

Following surgery, the patient may be taken to a recovery room, to an intensive care unit, or returned to his room. A recovery room is usually near the operating rooms and staffed by specially trained personnel. The patient is kept there until he recovers from the anesthesia and his vital signs are stable. Patients, who have had major surgery, are often taken from the operating theatre or from the recovery room to an intensive care unit. Minor surgical procedures often allow the patient to return directly to his room.

To whatever type of unit the patient is taken following surgery, he receives skilled nursing care. The patient's disease, the surgical procedure, the anesthetic and medications used have all had an effect on the physiological processes of his body. Very careful treatment and management of the patient is necessary for him to return to the most complete physiological functioning possible. The unit the patient will occupy is prepared in advance of his arrival. The bed is prepared by fan-folding the top linen to the far side of the bed. A rubber sheet and draw sheet should be in place and a towel or other protection at the head of the bed. Equipment for checking the vital signs, an emesis basin, and a padded tongue blade or airway are placed on the bedside locker. Additional equipment such as an intravenous stand, suction equipment or oxygen are made ready by the bed according to the patient's anticipated needs.

When receiving the patient into the unit :

1. Verify the identity.
2. Assist in gently moving the patient from the stretcher to the bed.
3. Position the patient on his side or on his back with the head turned to one side. (If spinal anesthesia was used, place flat on the back for the length of time required.)
4. Receive the report from the person transporting the patient.
5. Check pulse, respiratory rate and blood pressure. Note skin color.
6. The airway is to remain in place until expelled by the patient.
7. Check the dressings. Report if fresh blood is present.
8. Check drainage tubes. Attach to bottles as necessary.



9. Check the post-operative orders and carry out those needing immediate attention.
10. Check the patient's consciousness by calling his name. Do not slap or shake him.
11. Speaking in a normal voice, inform the patient where he is.
12. Put siderails in place. Stay with the patient if he is still under anesthesia.

The continuing care of the patient during the early post-operative period is concerned with :

1. Keeping the air passages open.
2. Checking the vital signs for indications of a problem.
3. Maintaining a good fluid balance.
4. Checking for excessive drainage from the post-operative site.

Nursing efforts are directly aimed at preventing problems of the respiratory and cardio-vascular systems that could cause death during the early post-operative period. Complications and discomforts are prevented or greatly reduced following surgery when intelligent nursing measures are adapted to each patient.

## RESPIRATORY PROBLEMS

### Obstruction of air passages

From the completion of surgery until the patient regains full consciousness from a general anesthesia, there is a possibility of respiratory obstruction either from the relaxed tongue falling back into the throat or by secretions collecting in the throat. Either could be fatal. Nursing measures are the only prevention. The tongue

remains forward in its normal position and secretions drain from the mouth if the patient is placed in a lateral position. If the patient lies on his back, the head must be turned to one side.

Patients, who have been given a general anesthetic, usually leave the operation theatre with an airway in the mouth. It holds the tongue in the normal, forward position. The airway is left in place until the patient recovers enough to expel it himself. If a patient, who has had a general anesthetic, does not have an airway when he arrives in the post-operative unit and is still unconscious, one should be put in place as a safety precaution.

The patient's breathing must be watched closely. Even with an airway in place, there is danger of mucus secretions blocking the air passage. Signs of obstruction are noisy breathing, dyspnea, or even absence of breathing and cyanosis. If any sign is noted, the mouth and throat is suctioned immediately. After suctioning, look in the mouth and, if the tongue has fallen back, pull it forward with a piece of gauze.

### Infections

Respiratory infections do not usually develop until a few days after surgery unless it had started before surgery. It is most often seen in a patient who has had to have emergency surgery. Signs of respiratory infection include fever, cough, purulent sputum, increased pulse and respiration rates, flushed skin, dyspnea and pain with inspirations.

Preventive nursing measures include frequent turning, deep breathing and coughing exercises, leg exercises, early ambulation, and a good fluid intake. If an infection develops, analgesics, antibiotics and oxygen are given as ordered by the doctor.

### **Atelectasis**

In atelectasis, the air sacs of the lungs become blocked with mucus. That provides a good place for bacteria and virus to grow and start an infectious process. It is prevented by the same measures used for preventing infections. Signs of atelectasis are cyanosis, dyspnea, pain in the chest, decreased breath sounds and chest movement on the affected side. There is often fever. Deep breathing, coughing and early ambulation are important in the treatment.

### **Hiccoughs (Singultus)**

Intermittent spasms of the diaphragm are called hiccoughs. The cause is uncertain, but it is believed by some to be due to gastric or abdominal distension or to irritation from drainage tubes in the upper gastrointestinal tract.

Many ideas have been tried to stop hiccoughs. Two methods that have been found helpful are, 1) breathe in and out while holding a paper bag closely around the nose and mouth, and 2) hold the breath while taking a number of large swallows of water. If there is gastric or abdominal distention, measures to relieve it may take care of the problem. Medication is ordered for persistent cases.

## **CARDIO-VASCULAR PROBLEMS**

### **Shock**

A very dangerous complication for a patient after surgery is shock. It is due to inadequate circulation, which in a post-operative patient, is most often the result of hemorrhage reducing the volume of circulating blood (also referred to as hypovolemia or hypovolemic shock). Post-operative shock can also be caused by the strain or trauma of surgery or by the anesthesia. The signs of shock are due to the effects of decreased circulation.



They are :

1. The blood pressure becomes progressively lower.
2. The pulse becomes rapid and thready.
3. Respirations are rapid and shallow, sometimes grunting.
4. The skin is pale and clammy with cyanosis of the fingernails and lips.
5. A very scanty urine output or anuria.
6. Apprehension changing to listlessness and unconsciousness.

A state of shock is prevented by maintaining an adequate fluid intake, according to the doctor's orders, during the fasting pre-operative period and during the surgery. A close check of the vital signs and of the operative site for bleeding provide the first hints of an impending problem. A decreasing blood pressure and increasing pulse and respiration rates must be reported to the doctor immediately.

Keep the patient comfortable with light covers, but do not apply external heat. The vital organs need all the blood possible. Heat applied anywhere to the outside of the body draws blood away from the internal organs which increases the danger to the patient. Stay with the patient, calmly attending to his needs until the doctor arrives or sends orders. Be prepared to start or increase intravenous fluids and oxygen. Give medicines if ordered. Check the vital signs regularly and carefully. Check the operative site frequently for bleeding including the linen under the patient.

### **Thrombophlebitis**

A **thrombus** is a blood clot and **phlebitis** is an inflammation of a vein. It most often occurs in a leg as a result of sluggish blood flow. The blood flow becomes

slow because of lack of movement or something tight around a limb. The inflammation starts first and the thrombus soon begins to form.

Symptoms of thrombophlebitis are pain, heat, redness and swelling at the affected area of the leg. The patient is kept on complete bed rest with the affected leg elevated. Warm fomentations are applied and medications given as ordered by the doctor. There should be no movement, rubbing or massaging of the limb as it could cause the thrombus to break away from the vein wall.

Thrombophlebitis is prevented by changing the patient's position frequently, by early ambulation and by the patient doing leg exercises. If the patient is unable to do the exercises, they are done passively by the nurse.

### **Embolus**

An **embolus** is a blood clot or other substance floating in a blood vessel. When a thrombus breaks away from the vein wall, it is then an embolus and is carried along through the blood vessels. It will usually pass through the chambers of the heart without difficulty, but become lodged in the branches of the pulmonary artery. If the embolus is small and gets lodged in a very small branch of the pulmonary artery, the symptoms will be chest pain, cough and dyspnea. A large embolus, lodged in a larger branch of the artery, produces sudden collapse and death.

Nursing efforts are directed at preventing the formation of an embolus which are the same measures used to prevent thrombophlebitis. If it does develop, there is to be no movement or rubbing of the limb.

## **GASTRO-INTESTINAL PROBLEMS**

### **Nausea and vomiting**

Although the use of newer anesthetics and techniques has reduced the amount of post-operative nausea and

vomiting, it is still a discomfort to many patients in the early post-operative period. It is best for the patient to take small sips of water at room temperature or hot tea until the nausea is past. The patient should not make sudden movements. Deep, panting breaths through the mouth helps overcome the urge to vomit. Keep the patient clean. Remove anything that has a strong odor.

Hold an emesis basin conveniently for the patient who is vomiting. Sometimes two people are needed to help the patient. One nurse splints the incision by holding a hand firmly on each side of the incision during vomiting. Wipe the patient's mouth. Assist him to rinse his mouth and wash his face after vomiting. Take the vomitus from the room immediately, measure and discard it. The amount and special characteristics of the vomitus is recorded on the patient's chart.

### **Thirst**

Patients are usually thirsty after surgery due to the restriction of fluids, the medications given before surgery and fluid loss during surgery. Some patients receive intravenous fluids, but still experience dryness of the mouth. Small chips of ice or small sips of water relieve the dryness. As the patient recovers from anesthesia, the amount of fluid can be increased as tolerated unless contraindicated. For those whose surgery requires that they have nothing by mouth, frequent mouth care is given. It not only refreshes the mouth, but relieves thirst.

### **Abdominal distension**

Air that accumulates and is retained in the intestines causes the abdomen to become distended. It usually develops by the second or third day if it is going to develop. The patient has abdominal pain, a feeling of fullness and is unable to expel gas. The abdomen feels firm. The problem is caused by a decrease of peristalsis.



which is the result of handling the abdominal contents during surgery, medications, anesthesia, inactivity and change of diet.

Nursing measures are often sufficient to overcome the problem. Early ambulation is a preventive measure as well as a treatment of abdominal distension. Walking is encouraged if the patient's condition permits it. Non-ambulatory patients are turned frequently. The insertion of a rectal tube is helpful in most cases. Sim's position or the prone position make passing flatus easier. Hot liquids are much better to relieve distension than cold liquids. In some cases the doctor will order medication to be given.

### **Retention of urine**

A patient should void within eight hours after surgery. If the bladder is not distended, the doctor may decide to allow more time for the patient to try to urinate. Make certain the patient is getting sufficient fluids. If permitted to get up, men can often void while standing by the bed with assistance. Women can be assisted to the toilet. Other nursing measures (discussed in chapter 10) may be tried. If all measures are unsuccessful, report it to the doctor for permission to catheterize the patient.

### **Summary**

Surgical procedures are beneficial and life saving to many people. However, there are risks and complicating problems that may be life-threatening to the patient. Expert nursing care, both pre-operatively and post-operatively, is needed along with the skill of the surgeon for the best recovery. Preparation for surgery requires attention to all aspects of the physical status and the emotional state of the patient. A patient, who is well informed about his physical problems and what to expect after surgery, usually progresses much better

post-operatively than those who are not given information.

Early post-operative care is concerned first with keeping the patient's airway open and checking closely for signs of shock. The prevention of other respiratory, cardiovascular, gastro-intestinal and urinary problems make up a large portion of the nursing care. Early ambulation is very important in preventing many of the problems.

General post-operative care of a patient to prevent complications and hasten return to full activity may be summarized as :

1. Check vital signs every 15 minutes until stable, then every 4 hours for several days.
2. Watch for airway obstruction.
3. Observe dressings regularly.
4. Watch for chilling.
5. Help maintain proper fluid, electrolyte and food intake.
6. Deep breathing, coughing and leg exercises every 3 to 5 hours.
7. Change position every two hours and encourage movement.
8. Assist with ambulation.
9. Measures to promote urinary and intestinal elimination.
10. Measures to promote comfort, rest and sleep.
11. Care of the surgical wound and dressings.
12. Measures to overcome the discomforts of nausea, vomiting, hiccoughs and thirst.
13. Attention to hygiene needs.

**Additional Study Topics**

1. Pre-operative anxiety and its relief.
2. Surgical nursing problems related to obesity.
3. Respiratory problems following surgery and their prevention.

**Learning Activities**

1. Study the medical records of two pre-operative patients. Identify the risk factors for each. Make a nursing care plan for each to show the action necessary to overcome or lessen the risk problems.
2. Practice leg, coughing and deep breathing exercises with a classmate.
3. Do a role play of a patient facing surgery and a nurse answering questions and giving instructions.



## CHAPTER 18

# THE CARE OF WOUNDS

### CHAPTER CONTENTS

Types of wounds

Healing of wounds

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Changing dressings

    Equipment and supplies needed

    Technique of changing dressings for a clean wound

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    Packing a wound

    Wet, sterile dressings

    Holding a dressing in place

        Adhesive tape strips

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### LEARNING OBJECTIVES

1. Keeping a wound clean and healing quickly.
2. Changing a dressing with sterile technique.
3. Caring for a draining wound
4. Irrigating a wound.

## THE CARE OF WOUNDS

A wound may be intentionally or accidentally made. The wound a surgeon makes in performing an operation is intentional. Accidental wounds are obtained in many ways. Both types of wounds are seen in a post-operative unit because accidental wounds must often be surgically repaired.

There are other ways of describing wounds. They include :

1. Incision — A clean, smooth cut made by a sharp object.
2. Laceration — A cut with rough, irregular edges.
3. Puncture or stab wound — A wound made with a pointed object.
4. Abrasion — The removal of surface tissue by friction with a hard surface.
5. Contusion — A bruising of the tissues by a blunt object.

### Wound Healing

The healing of wounds is influenced by 1) the extent of the injury, 2) the type of tissue injured, 3) the nutritional state of the tissue, 4) the amount of oxygen available to the site, 5) the presence of pathogenic organisms, and 6) the presence of certain diseases.

Healing takes place by **primary intention** or by **secondary intention**. In **primary intention**, the two edges of the wound lie closely beside each other. There is no infection or separation of the edges. Union of the two edges can progress quickly. Most surgical incisions heal by primary intention because strict sterile technique is used and

surgeons are careful to use sutures or clips to hold the edges together. It is believed that surgical wound healing by primary intention is strong enough for the strain of normal activity in 15 to 20 days.

Healing by **secondary intention** is a slower process. The edges of the wound are either never close to each other or they become separated by strain or infection. The space between the edges is gradually filled in by granulation tissue forming from each side of the wound and finally meeting. This causes a larger scar.

Many new cells must be formed in the healing process. Food nutrients and oxygen, required for the new cells, are brought to the site by the blood. For this reason, areas having a good blood supply heal more quickly than where the blood supply is not so abundant. Healing is slow in a malnourished, anemic person.

### **Wound infections**

Infections are a problem in surgical wounds, but a more serious problem in accidental wounds because the object causing the wound is likely to have bacteria on it. Since abrasions affect only the surface tissue, they can be cleaned and treated with an antiseptic that kills the bacteria. Puncture or stab wounds present a special problem because the outer tissues tend to heal closing the wound. Anaerobic bacteria, especially those causing tetanus, may have been carried deep into the wound by the penetrating object. They produce toxins that may be fatal to the patient. Puncture wounds need to be thoroughly cleaned by a doctor and a drain inserted. Deeply lacerated or puncture wounds may be affected by pus-forming aerobic bacteria as well as by anaerobic bacteria. Delay in healing may result from diabetes, liver disease or anemia even though no infection is present. A wound that is healing without infection is called a **clean wound**.



### **Wound separation**

Wound edges may separate during the healing process due to infection, malnutrition or strain on the wound from coughing, vomiting or lifting. Separation of the wound edges is called **dehiscence**. The separation may be superficial, partial or complete. If the separation is complete with protrusion of internal organs, it is called **evisceration**. Both are serious complications that are most likely to occur about the sixth day after surgery. The symptoms are a pink serous drainage on the dressing. The patient will often say it feels as though "something has broken away." When a nurse discovers that either dehiscence or evisceration has occurred, she should stay with the patient and send someone else to call the charge nurse or the doctor.

In dehiscence, the doctor may re-suture the wound, or he may think it best to hold it firmly together with adhesive strapping or a binder over a sterile dressing and allow it to heal by secondary intention. If evisceration has occurred, the patient will be taken to the operating theater for emergency re-suturing. The nurse covers the wound with sterile gauze moistened with sterile normal saline to protect the internal organs and arranges for the patient to be taken to the operating room. Reassure the patient and observe him for signs of shock. Follow all orders of the doctor promptly.

### **Covering wounds**

The care given to wounds is to aid and improve healing and to prevent farther injury. Wounds may be covered by a dressing or left uncovered without a dressing if it has sealed itself and is not in danger of being irritated or further injured. Sometimes it is left uncovered during the day and covered at night for protection. Reasons for treating a wound uncovered are 1) the newly forming skin tissue may be irritated and destroyed by friction from the dressing, 2) organisms normally

present on the skin may be rubbed into a wound by a loose dressing, 3) a warm, dark, moist area under a dressing aids the growth of bacteria and 4) air is helpful to keep the wound dry.

There are many wounds that require a dressing for the best healing. The benefits of dressings are that they 1) aid in keeping microorganisms from the wound, 2) absorb drainage, 3) help to keep the wound edges together, 4) provide pressure to help control bleeding and edema and 5) provide immobilization and support to a wound to hasten healing.

### **Changing dressings**

Dressings are changed regularly. The frequency is determined by the type of wound and whether it is clean or infected with drainage and the amount of drainage. A dressing should not be changed immediately before or after a meal because it may affect the appetite of the patient or cause nausea.

A dressing is often done at the bedside. The patient may be taken to a treatment or dressing room. In some cases the dressing is changed in the operation theatre. There are times when the change of dressing is very painful to the patient and the doctor will order a medication to be given before the procedure. It should be given 15 to 30 minutes before starting in order to have time to become effective.

### **Equipment for changing a dressing**

It is preferable to have individual sterile dressing trays. Sterile, disposable trays are prepared commercially and used by some hospitals. Many hospitals prepare their own dressing trays and reuse some items after resterilizing. The use of individual dressing trays decreases the possibility of cross infection. Know what is on the tray and supplement as necessary.

The equipment and supplies needed to change a dry dressing on a clean wound are :

1. A sterile towel for a working area.
2. A sterile artery or thumb forceps to remove soiled dressing.
3. A second sterile forceps to apply new dressing.
4. Two sterile containers for solutions( usually an antiseptic and normal saline).
5. Unsterile container for waste (preferably a disposable plastic bag or papa bag or a kidney tray).
6. Dressing materials and swabs.
7. Adhesive tape or bandage.

Dressing materials are usually folded gauze squares of different sizes. Cotton filled gauze pads are used to absorb drainage when necessary. A cotton filled pad is not put directly on a wound because the cotton will stick to it. Normal saline is used to loosen the old dressing if it has stuck. Cotton or gauze swabs are used to clean the area.

### **Technique of changing a dressing on a clean wound**

It is sometimes necessary for a nurse to wear a mask when changing a dressing in order to protect the wound from infection. Some hospitals require that a mask be worn for changing all dressings. Correct mask technique must be followed when they are used. Careful handwashing and aseptic technique must be practiced. Sterile gloves are used if the hands need to hold the sterile supplies or touch the wound. After checking the dressing order, handwashing, preparing the equipment and the patient the procedure can begin :



1. Strips of adhesive tape (if to be used) are placed on the edge of an object within easy reach.
2. Expose the dressing area.
3. Loosen adhesive strips and gently remove from the outer edge toward the dressing. (If bandage is used, remove it.)
4. Remove the dressing with sterile forceps. If the dressings stick to the wound moisten it with sterile solution before removing it.
5. Remove inner dressings with sterile forceps. Discard the dressing and forceps. Do not lift over sterile articles.
6. Open sterile tray and dressing packets. Arrange conveniently.
7. Observe the wound carefully for position of edges, inflammation, edema drainage and odor.
8. Clean the wound with the antiseptic on cotton balls or swabs, beginning at the wound and cleaning outward in a circular manner. Use each swab only once and discard. Clean the area two or more times as needed. Avoid damage to new tissue cells by gentle cleansing movements.
9. Using the sterile forceps, put the fresh dressing in place.
10. Secure the dressing in place with adhesive tape, bandage or a binder as is practical and make the patient comfortable.
11. Remove and care for equipment and materials.
12. Record the procedure and condition of the wound on the patient's chart.

### **A draining wound**

Additional gauze squares and pads are required according to the amount of drainage. A drain may be inserted to drain fluid which has collected or expected to be collected. Drains used include rubber tubing, corrugated rubber, penrose tubing or catheters of various sizes. They are flexible and may be cut to required size. Usually a sterile safety pin is put through the drain on the outside of the wound to keep it from going inside the wound. A special clip may be used in place of the safety pin. The doctor may take care of the dressing and drain or may request the nursing staff to do it. Often he will order the drain to be shortened a certain amount daily or on alternate days. A draining wound dressing is changed whenever it is wet. A catheter is placed in some wounds and connected to a drainage container. It is cared for as directed by the doctor.

### **Shortening a drain**

A sterile forceps, sterile scissors, and a sterile safety pin or clip is needed. When the dressings have been removed from the wound, pick up the end of the drain with the sterile forceps, pull it out the required distance and cut it off with the sterile scissors. Carefully insert the sterile safety pin or put the clip in place. Clean the skin around the wound and apply a protective ointment. Sterile gloves are worn to do this. A gauze square, cut half-way through on one side, is placed to surround the drain. Continue and complete the dressing procedure.

### **Irrigating a wound**

When a doctor orders the irrigation of a wound, he orders the solution to use. In addition to the equipment for doing a dressing, an aseptic syringe, irrigating solution, and a basin for catching the irrigating solution

are needed. Sterile gloves are needed if the wound is to be touched.

After the old dressing is removed, position the patient to allow the solution to flow from the upper end over the wound, and into the basin. Fill the syringe with the sterile irrigating solution. Direct it to all areas of the wound, especially to areas having an exudate. Continue irrigating until all exudate is removed and the returning solution is clear. Dry the area with gauze and complete the dressing.

### **Wet, sterile dressings**

Wet dressings are sometimes ordered for wound care because of their cleansing action and the increase in drainage that results. The doctor indicates the solution to be used. There does seem to be a tendency for wet dressings to cause a breaking down of skin tissue which makes it important that they be used only when ordered by a doctor. Alternating wet and dry dressings helps avoid the problem. Some authorities believe a waterproof covering over the dressing is responsible for tissue destruction and recommend that only sterile, dry dressings be placed on top of the wet gauze.

The usual dressing procedure is followed in applying a sterile wet dressing except that after the wound has been cleaned, sterile gauze is saturated with the designated sterile solution. Excess solution is squeezed from the gauze with sterile forceps. The wet gauze is placed on the wound and covered with the dry dressing.

### **Securing a dressing**

A dressing must be held firmly in place without slipping and rubbing the wound, yet not so tight as to obstruct circulation. Adhesive tape is most frequently used to hold a dressing in place. It does not stick well on hairy skin. An area that is hairy enough to cause a problem, is shaved or an alternate means of securing the dressing



is used. The application of tincture of benzoin or a similar product, protects the skin and causes the adhesive tape to stick better. The dressing is never completely covered with adhesive, but only strips of it are put across in order to allow moisture and heat to come out. It helps the skin stay in good condition.

If the tape is folded under on to itself at the outer end, the small tab formed is useful for easy grasping to remove the adhesive. Adhesive that remains on the skin should be immediately removed. An easy way to remove it is to apply mild ointment (e.g. vaseline or A & D ointment) and allow it to remain a few minutes. The adhesive can then be removed by gentle wiping with gauze or cloth. Acetone will remove it, but it is very irritating to the skin.

The skin of some people is sensitive to adhesive. A non-allergic adhesive tape is available to use on persons who have the problem. Sometimes the dressing is held in place by roller gauze bandage. The gauze is rolled smoothly and firmly around the limb or body part. The technique of applying a bandage to the different areas of the body is found in first aid textbooks.

Some wounds require that the dressing be changed every few hours. It is advisable, in such cases, to use **Montgomery straps** to hold the dressings in place. In some areas, they can be purchased from medical shops, but they are easy to make. Cut strips of adhesive tape. One end of each strip is folded back about 5 cm (2 inches) on itself. Cut one or two small holes (eyelets) near the end of the double portion. Place the adhesive strips in pairs on each side of the dressing so that only the folded portion of each strip is on top of the dressing and only partly cover it. Use a piece of roller gauze or similar material to put through the eyelets and tie each pair of adhesive strips together. Soiled dressings can be removed and a fresh one applied without

changing the adhesive tape each time. However, Montgomery straps should be changed every two or three days in order to prevent skin irritation. The skin is carefully cleaned and new straps applied in a slightly different location. A strap is always changed if it becomes soiled by drainage.

### **Summary**

The care of wounds is for the purpose of aiding their healing and preventing infections or other complications. Cleanliness is essential to prevent the introduction of bacteria into wounds. Good nutrition and circulation also require nursing attention in order to increase the healing ability of the body tissues. There is a trend to treat wounds by leaving them exposed to the air. However, a covering is necessary for the care and healing of some wounds. Changing a wound dressing is necessary to good healing, but caution is needed to prevent injury or destruction of new cells being formed in the healing process.

### **Additional Study Topics**

1. Anaerobic bacteria and wounds.
2. The problems of dehiscence and eviseration.

### **Learning Activities**

- 1 Prepare a sterile dressing tray.
- 2 Collect a sample of every type of dressing material used in your hospital and discuss when each would be used.
- 3 Assist a senior nurse in changing a dressing.
- 4 Practice making Montgomery straps.

## **CHAPTER 19**

### **HEAT AND COLD THERAPY**

#### **CHAPTER CONTENTS**

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##### **Cold therapy**

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**Contraindications to the use of cold applications**

**Dry cold application methods**

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**Disposable cold pack**

**Moist cold application methods**

**Cold compress**

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## **LEARNING OBJECTIVES**

- 1. Applying heat to a local area of a patient by a hot water bag, heat lamp or a heat cradle.**
- 2. Applying moist heat by a sterile or unsterile compress or a hot soak**
- 3. Preparing a Sitz bath and assisting a patient having the treatment.**
- 4. Applying an ice bag or collar.**
- 5. Applying a cold compress**
- 6. Giving a cooling sponge to a patient with an elevated temperature.**

## **HEAT AND COLD THERAPY**

Members of the healing arts have used hot and cold applications for many centuries to aid healing and relieve pain. Some present day medical personnel believe we are only beginning to appreciate their therapeutic value.

### **HEAT THERAPY**

#### **Effects of locally applied heat**

Heat, when applied to the body, dilates the blood vessels and relaxes the muscles of the area. These effects result in several benefits to the patient. Dilation of the blood vessels increases the circulation of blood to the area which means that increased nutrients, oxygen, blood cells, and antibodies arrive. Metabolism and repair of the injured tissues (healing) progresses more rapidly with the additional help. Dilated vessels carry the waste materials and excess fluid away faster which reduces edema and hastens the healing process. The increased blood supply strengthens fatigued muscles by the arrival of nutrients and oxygen and the removal of waste. This, along with the relaxation of muscle tissue relieves pain. Local congestion is relieved by hot applications because circulation is increased. Congestion deep in the tissues is relieved by applying heat to the surface of the body because blood is drawn from the deep centers to the surface.

Phagocytosis and suppuration (pus formation) are speeded up in cases of infection by the application of heat. This allows earlier removal of the pus permitting healing to begin.

Maximum increase in circulation occurs 20 to 45 minutes after application of heat. A rebound reaction then begins with constriction of the blood vessels taking place and the benefits of the heat are lost. For this reason heat is

applied for only the specified length of time, after which it is discontinued and the tissues allowed to rest for at least an hour before reapplying heat.

Both dry heat and moist heat are used in treatment. Moisture conducts heat better than air, which is believed to increase the benefit from it. However, moist heat must be used with greater care because of a greater danger of the patient being burned. The affected area is checked frequently during the treatment. Increased pain or swelling, decreased sensation, or increased redness indicate that the application should be discontinued.

### **Contraindications to heat therapy**

Although heat is very beneficial in treating injuries and infections, there are contraindications to its use. It should not be used when there is a malignancy, impaired heart, lung or kidney function, edema associated with venous or lymphatic disease or when there is an acute inflammation (e.g. appendicitis). Heat applications must be used very cautiously in an unconscious patient or one with a loss of sensation in the area of application.

### **Methods of applying dry heat**

Dry heat may be applied by a hot water bag, an electric heating pad, a heat lamp, a heat cradle or a disposable heat pack.

### **Hot water bag**

The water temperature for a hot water bag should not be more than 52°C (125°F) for an adult and 46°C (115°F) for a child or elderly person. If a bath thermometer is not available, check the temperature by placing the bag against the inner aspect of the forearm. It should be comfortable to the skin. If there is any doubt of water being too hot, always make it cooler. Fill the bag only half to two-thirds full. Expel air from the



bag, close it tightly, and check it for leaks. A cloth cover is always put on a hot water bag to protect the skin. Put the cloth cover over the filled bag and place it in position on the patient.

### **Electric heating pad**

These are more likely to be used in a home, but are available in some hospitals. The pad is made of cloth with plastic or rubber covered wires placed between layers of the materials used. They do present safety problems because the wires can break and pierce through the cloth. There must be no moisture present when using the pad because of the danger of causing an electrical shock. It has a control which is set at the desired temperature and it is maintained until readjusted or discontinued. Many people find it a very comfortable way of obtaining heat. It is put in a pillow case or other removable cover, the electrical plug is connected to an outlet, and after the pad has become warm, it is put in place on the patient.

### **Heat lamp**

A portable floor lamp with a flexible neck (gooseneck) is used. A bulb no stronger than 25 watts is best. The lamp is placed beside the bed and adjusted so that it is at least 45 cm (13 inches) from the area to be treated. Expose the site to the light for the required length of time. Reapply medication and dressing if necessary. Make the patient comfortable. Record the length of the treatment and the condition of the area on the patient's chart.

### **Heat cradle**

A 25 watt or less light bulb on an extension cord is attached to a bed cradle frame to make it a heat cradle. The top sheet is fanfolded to the foot of the bed and the frame put over the patient so the light bulb is at least 45 cm (18 inches) from the patient. Expose only

the area to be treated. Put the bed sheet over the cradle. Connect the electrical plug to the outlet. Remove the cradle and bulb at the end of the treatment unless the cradle is to be left in place to hold the bed linen off the patient. In that case, the bulb is removed to prevent breakage. Apply medication or a dressing to the area if ordered. Record the length of the treatment and the appearance of the area in the patient's chart.

### **Disposable heat pack**

Packs for heat are prepared commercially by using chemicals. The pack has instructions to describe how to activate the chemicals to start producing heat at a controlled temperature. The length of time the chemical activity continues is indicated. They are safe and convenient to use. The pack is discarded after use.

### **Methods of applying moist heat**

Moist heat is applied as a compress, a soak or a Sitz bath. The method selected depends on the part of the body needing the treatment, on the patient's condition and convenience.

#### **A hot compress**

Any area of the body can be treated by a compress. Water or a solution ordered by the doctor is used to moisten the compress. Sterile equipment and technique is used if the compress is applied to an open wound or to broken skin. When the skin at the site is in good condition, a clean technique is used. A washcloth may be used for a small compress. A towel may be used when a large area is treated. Sterile gauze is used for a sterile compress.

A basin containing hot water (or solution) that is 40.6° to 43.3°C (105° to 110°F), 2 forceps and the gauze or cloth for the compress are taken to the bedside. Sterile



equipment and technique are used if indicated. The treatment site is exposed. The compress is placed in the hot water, then lifted out with the forceps and excess water squeezed from it. Make sure it is not hot enough to burn the patient. Place the compress in position. Cover with a larger dressing pad or towel. Check the skin frequently. Remove the compress after the specified length of treatment. Apply medication and a dressing if ordered. Make the patient comfortable. Record the treatment, its length and the skin condition in the patient's chart.

### **A hot soak**

Moist heat can be applied to an extremity by immersing it in a container of warm water, normal saline or other solution ordered. Sterile materials and technique must be used if the skin is broken or a wound is present. The temperature of the solution should be between 40.6° and 43.3°C (105° and 110°F). The treatment may be given in the patient's room or in a treatment room. Help the patient into a comfortable position. Place the part to be immersed in the water in good alignment with the rest of the body. There should be no pressure on any part of the body from the basin.

Fill the basin half full with water or the solution of the appropriate temperature. Remove dressings or bandages if present. Place the extremity in the basin in good alignment. Pad the edge of the basin as necessary to prevent pressure. Check the patient several times during the treatment. It is continued for 15 to 20 minutes unless ordered differently. At the end of the treatment time, remove the limb from the water and dry gently with a towel. Use a sterile towel if it is a sterile procedure. Examine the area carefully. Apply a dressing if needed. Leave the patient comfortable. Record the length of the treatment and the appearance of the limb in the patient's chart.



### Sitz bath

A warm soak of the pelvic area is called a Sitz bath. It is often used following rectal surgery or for gynecological problems to relieve congestion and hasten healing. There are specially designed tubs for the treatment. An ordinary bathtub or any basin or tub large enough for the hips to fit into may be used. It is a clean, procedure. sterile equipment and technique are to be used if indicated. The tub or basin should have enough water to come to the level of the umbilicus when the patient is seated in it. The temperature of the water should be between 40.6° and 43.3°C (105° to 110°F). The treatment is continued for 15 to 20 minutes. If the patient shows signs of weakness or faintness, the procedure is terminated.

The room to be used for the Sitz bath is made ready before bringing the patient. The tub, hot and cold water, a towel, a light blanket, and dressing materials, if needed, are arranged conveniently. Bring the patient to the room. Put hot and cold water in the tub to make it the correct temperature. Assist the patient to undress and remove dressing if present. Patient may be dressed in hospital gown. Help the patient sit in the water. Place a light blanket over the patient's shoulders for warmth if necessary. If it is the first post-operative day or the patient seems weak, the nurse remains with the patient throughout the treatment. Stronger patients may be left alone, but checked frequently.

At the end of the treatment, help the patient from the tub. Dry the area, examining the condition of the problem. Apply dressing if needed. Help the patient dress and return to his room. Record the treatment and the patient's reaction to it in the patient's medical record.

## COLD THERAPY

### Effects of locally applied cold

The application of cold to the body surface causes constriction of blood vessels, relaxation of muscles,

reduction of pain, and reduction of body temperature. The constriction of blood vessels reduces the blood flow which aids blood clotting, helps control hemorrhage and edema. Because of the decreased blood supply, metabolism is decreased in the area of cold application. For this reason it is an aid in preventing gangrene.

Pain is relieved by a cold application because it relaxes muscles and slows the conduction of nerve impulses. Both actions are involved in relieving pain.

Cold applications damage the skin if left on for too long a time. Blisters, a breakdown of the tissues or ischemia (lack of blood) to the treated area occurs. The skin becomes very pale or bluish in color. If a change in color or damage to the skin is noted, the cold application is discontinued at once. A rebound reaction occurs from cold applications after 30 minutes to an hour with dilation of blood vessels taking place. An application should, therefore, not be continued for more than 30 to 45 minutes at one time, then allow the tissues to rest.

### **Contraindications to the application of cold**

The presence of edema or diseases causing impaired circulation are contraindications to applying cold to the body. Edema is often prevented by the application of cold, but after it has developed, the cold will only make it remain longer because the constricted vessels cannot carry the extra fluid away. Diseases that impair circulation are peripheral vascular disease, arteriosclerosis, diabetes, and certain neurological conditions. Constricting the blood vessels by cold applications adds to the problems caused by circulatory disease.

### **Dry cold application methods**

Dry cold is most commonly applied by an ice bag or collar. Disposable cold packs are sometimes used if they are available.



## **Ice bag or collar**

The two are different only in shape. An ice bag is a round or rectangular rubber or plastic bag with a large opening. An ice collar is a long, narrow shape designed to fit around the neck. However, it can be used on any part of the body. It has a hole at each end for tying it in place.

To use any type of ice bag, fill it half full or a little more with crushed ice or ice cubes. Expel air and close the bag tightly. Place it in a cloth bag or wrap it in a cloth so there are no wrinkles. The cloth will absorb moisture that comes on the outside of the bag as the ice melts. Take the bag to the bedside, expose the area to be treated and put the bag in place. Check frequently to make sure the ice bag remains in the correct position, there is no leaking and no adverse reaction to the cold. Inspect the skin for discoloration and numbness. Because of the rebound reaction the ice bag is not left in place for more than 30 to 45 minutes. The bag is removed and the tissues allowed to recover before reapplying. Record the treatment and the condition of the tissues in the patient's chart.

## **Disposable cold pack**

Cold packs are prepared commercially with chemicals. They are prepared to maintain a certain temperature for a specified length of time. The temperature and length of activity are printed on the pack along with instructions for activating the chemicals. The pack is discarded after use.

## **Methods of applying moist cold**

Moist cold is applied as a cold compress to relieve pain or as a cooling sponge to lower body temperature.



### **Cold compress**

It is often applied to the forehead to relieve a headache or to an injured extremity to prevent edema when an ice bag is not available. A clean washcloth or other small cloth folded to a suitable size makes an excellent compress. A bowl of cold water and the cloth are brought to the bedside. Ice chips are often added to the water to keep it cool. The cloth is immersed in the cold water, lifted out and squeezed dry enough that it does not drip. It is folded to the needed size and placed on the area to be treated. The compress is checked frequently for its temperature. As soon as it begins to get warm, it is immersed in the cold water, squeezed and reapplied. It is helpful to have two compresses, one in the water getting cold while the other is on the patient. Continue the application 15 to 20 minutes 4 or 5 times a day. Record the treatment and the patient's reaction to it in the medical record.

### **A cooling sponge**

Cold water is used in the home as well as in hospitals for reducing the fever of people especially children. Most hospitals have a policy of giving a cooling sponge to any patient if his temperature goes above a stated amount. The temperature of the water for the bathing should be about 29.4°C (85°F). Ice chips may be added to keep the water cool. Sometimes cooler water is ordered in unusual circumstances. The water will be uncomfortable for the patient if it is cooler than 18.3°C (65°F).

When giving the sponge, keep in mind the location and pathway of the large, superficial blood vessels. Bathe the patient along their course. Large vessels are found in the neck, in each axilla and down the anterior aspects of the arms. Large vessels come near the surface in the groin and go down the anterior thighs to the knees.

In the lower leg, large vessels are present both anteriorly and posteriorly.

A basin of cool water, a washcloth, a towel, and a thermometer are taken to the bedside. Cover the patient with the topsheet. Remove the patient's gown. Wet the wash cloth in the cool water. Squeeze it only enough so that the water does not drip from it. Bathe the patient's neck, axilla and all the way down the arm on the anterior surface. Turn the patient on the side and the back and buttocks bathed. Check the patient's temperature during the procedure. Continue the bathing for 25 to 30 minutes or until the temperature is slightly above normal. It will continue to decline after the bathing is stopped. Dry the patient. Replace the gown and bed linen. The temperature is checked frequently after the cooling sponge. The treatment and the patient's response to it are recorded in the medical record. The bathing is repeated if necessary.

### Summary

The benefits of hot and cold applications have made their use popular for many years. There are enough ways of applying both heat and cold that they can be used on any external area of the body to bring improvement and healing. Both heat and cold relax muscles and relieve pain. However, their other actions are so different that the choice of which to use must be carefully made. The action on the blood vessels is probably the most important in determining whether to use heat or cold. Heat dilates blood vessels in the area of application which increases circulation and metabolism. Cold constricts the blood vessels which decreases circulation and metabolism.

Temperatures that are either too hot or too cold have a damaging effect on the skin. Both must be used with great care to prevent serious injury.

**Additional Study Topics**

1. Hypothermia treatment.
2. Hydrotherapy and its uses.
3. Ultraviolet and infrared therapy.

**Learning Activities**

1. Demonstrate applying heat by a hot water bag, heat lamp, heat cradle and a hot compress.
2. Assist a senior nurse in giving a cooling sponge.
3. Make a diagram of the large blood vessels of the extremities whose pathway should be followed in giving a cooling sponge.



## **CHAPTER 20**

# **ADMINISTRATION OF MEDICINES**

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## **LEARNING OBJECTIVES**

1. **Safety policies and practices in administering medicines.**
2. **Administration of oral medications**
3. **Applying medicines to the skin, eye, ear, nasal passages and the vagina.**
4. **Administering medications subcutaneously, intramuscularly, intradermally and intravenously**

## ADMINISTRATION OF MEDICINES

Medicines are substances used for the treatment or prevention of diseases. They are also referred to as drugs. Because of their effect on the body, the giving of medicines is one of the very important responsibilities of a nurse. Medicines are given only as ordered by a doctor.

### MEDICINE ORDERS

#### Types of orders

**Written orders** are the accepted type of order. **Verbal orders** are accepted in emergency situations, but are to be written as soon as the emergency is over. **Telephone orders** are accepted in many institutions. Whoever speaks with the doctor on the telephone, writes it in the appropriate place along with the name of the doctor and the signature of the person receiving the order. The telephone order must be read back to the doctor for confirmation. It is signed by the doctor when he comes to the unit. **Standing orders** are those given to be carried out whenever a certain condition exist. e.g A particular antipyretic when a patient's body temperature exceeds a certain level. Standing orders are prepared and signed by a doctor. A **stat order** is one that is to be given immediately and only one time. A **PRN order** means it may be given as necessary. There is usually a limit to the frequency and the length of time a PRN order may be given.

#### Content of the medicine order

Every order for medication must contain certain information. 1) The date and time of ordering, 2) the name of the patient, 3) the name of the drug, 4) the dosage of the drug, 5) the route of administration,



6) the frequency of administration, and 7) the signature of the doctor writing the order.

The doctor assumes the responsibility of the order being correct in all its parts. However, there is always a possibility that an error has been made in writing some part of the order. A nurse may question any order she thinks has an error. Sometimes a doctor writes an order different from the usual order for a specific purpose, but the nurse should know the reason and of special observations she should make. A patient's medical history should include allergy to medications, but it is sometimes discovered later by a nurse. Withhold any drug the patient says he is allergic to until it can be discussed with the doctor. If the handwriting is difficult to read, any doubt must be clarified before giving the medication.

### **Safety policies for medicine administration**

It is necessary for hospitals to have policies providing safety for the patients and for staff members. Included are policies regarding medications. It must be clear who is permitted to write orders and who is permitted to give medicines to a patient. Written and signed orders are the accepted standard because of the safety involved for the doctor, the nurse and the patient. The medicine orders must become a part of the permanent record of the patient for future reference. The nursing staff must be familiar with all medicine policies.

There is need for a policy for the length of time a drug may be given before it must be re-ordered. The time is sometimes specified in the order, but many times it is not. Therefore, a fixed period of time from one to several days is usually set for re-ordering. The period may vary with different drugs. The nursing staff calls the doctor's attention to the expiration of an order.

Patients are often taking medicines at home before being hospitalized. They may arrive for admission carefully

bringing all the medicines with them. They are not continued in the hospital unless the doctor orders that they be given. If a patient is transferred to another hospital, the medicines are stopped. The receiving hospital doctors will order the treatment there. Medications are stopped when a patient goes to surgery and new orders given after the surgery is done.

### **Safety in the administration of medicines**

There are different ways of supplying medicines to the nursing units from the pharmacy for the patients. The method best suited to the situation in each institution is chosen for use.

### **Methods of supply**

Two systems are the basis for most procedures of medicine giving. A standard system enjoying wide favor for many years is the **stock supply** system. A good supply of the frequently used drugs are kept in large stock bottles on the unit for giving to the patients as ordered.

The other system is the **individual patient supplies** system. It is a newer system and is gaining wider usage. Medications are prepared in the pharmacy for each patient in separate packets. They may be prepared in packets for one time, for an eight hour shift, or for a twenty-four hour period. The packets are labeled in the pharmacy with the patient's name and identifying information as well as the name and dosage of the drug. The packets are delivered to the nursing units. In both systems, the medications must be checked and given to the patient at the appropriate time by a nurse.

### **Preventing errors**

A safe cupboard, that can be locked, is necessary for storing medicines on a nursing unit. The nurse preparing medications on the nursing unit works alone in a quiet



atmosphere, without disturbance, in order to decrease the possibility of making errors. There should be good lighting to enable quick, easy reading of clearly marked labels. The medications should not be left alone after they have been prepared for giving.

A widely used aid in preventing errors in medicine giving is the medicine card. A small card for each medication of a patient has the patient's name, room and bed number, name of the drug, dosage, frequency and times of giving, and the route of administration. Often the date and time of starting the drug and the date and time of discontinuing are indicated on the card. The cards must be kept up-to-date and checked with a record of all medicines being given such as a Kardex file or the doctors' order sheets. After giving the medicines the cards are used to record them on the patient's chart.

Some institutions use a medicine book in which all the information of each patient's medications is listed. The book is used for preparing, giving and charting the medicines. The book is checked with the doctors' orders sheets each time medicines are given in order to prevent errors.

Another safety measure is the **three checks** in pouring drugs. The name and dosage on the medicine container is checked three times with the name of the medicine required in the order, 1) as it is taken from the cupboard, 2) before opening the bottle or packet, and 3) before it is replaced. When the drugs are pre-packaged and labeled, the checks should be, 1) as it is taken from the cupboard, 2) before opening the packet, and 3) from the empty packet.

Basic to giving medicines are the five rights to observe : 1) the right drug, 2) the right dose 3) the right route, 4) the right time, and 5) the right patient. The first four rights are certain if the three checks are properly done.



The right patient involves positively identifying the patient. In many hospitals, a band containing the name is attached around the patient's wrist at admission. The conscious patient should be asked to tell his name. Special care must be taken when there are two people with the same name in the same room or unit.

When giving oral medications, remain with the patient until all medicines have been swallowed. In some cases it may be necessary to look carefully in the patient's mouth to make certain the medicine has been swallowed. Medicines are never left at the bedside for the patient to take later. Should the patient not be in the room, the medicines are taken back to the medicine cupboard and again brought to the patient as soon as he returns. If a patient refuses a medication or it is omitted for any reason, the omission is recorded on the patient's chart along with the reason.

It is possible that errors will be made in giving medications. As soon as it is realized, check the patient's condition, then notify the doctor of the error and the patient's condition. Follow his directions for further action. The error, its effects and the action taken are recorded on the chart. Most institutions have a form to be filled in describing the error which is sent to the nursing administration office.

### **Routes of administration**

Medicines are administered by a route that will be safe as well as effective. The routes are :

**Orally** — for drugs that can be absorbed from the digestive tract.

**Parenterally** — For drugs that are not absorbed from the digestive tract, cannot be taken orally, or when quick action is desired.

**Topically** — When action is desired in a localized surface area.

**Inhalation** — Vaporized drugs are breathed into the lungs.

### **Medication effects**

Terms used to describe the different effects of drugs include :

**Therapeutic** — the desired, healing effect.

**Local effect** — at the site of administration or one certain place in the body.

**Systemic effect** — affecting the entire body.

**Side effect** — additional effect beside the therapeutic effect.

**Toxic effect** — dangerous effects from an overdose or excessive accumulation.

**Synergistic effect** — When two drugs given together have a greater effect than their combined effect if given separately. It may be a harmful or a helpful effect.

**Antagonistic effect** — Two drugs given together work against each other reducing the effect of each.

**Untoward effect** — undesirable, but predictable effects.

**Adverse effect** — unpredictable, undesirable effect.

**Allergic effect** — abnormal, hypersensitive reaction of a local or systemic nature.

**Idiosyncrasy** — an abnormal, unexpected effect.

**Tolerance** — increased doses must be taken to be effective.

**Cumulative effect** — accumulation of a drug in the body due to inadequate liver function or inadequate excretion.

**Dependence** — A physical or psychological need for a drug with withdrawal symptoms if it is not received.

The effectiveness of medicines is increased by using nursing measures along with the medication. Hypnotic drugs for sleep may do little good unless the patient is made physically comfortable in all possible ways and the room darkened and quiet. Analgesic drug action is more effective when accompanied by pain relieving nursing measures. All drug therapy is more effective when accompanied by intelligent, caring, gentle nursing measures.

### **Administration of oral medications**

The procedure of giving oral medications varies slightly according to whether stock bottles of drugs or pre-packaged individual doses are used. The procedure for the stock supply system will be described. Usually all pills and capsules for the same patient are placed in one medicine glass or cup. A drug is kept separate if the pulse or blood pressure must be checked before giving it.

### **Giving medicines from a stock supply**

Medicine is removed from stock bottles in a manner that does not contaminate it. The correct dosage of pills or capsules is emptied into the bottle cap, then put into a medicine cup. Always shake a bottle of liquid medicine before pouring it because solid particles settle to the bottom of the bottle. After shaking the bottle well, hold a medicine glass with milliliter markings at eye level with the thumbnail at the level of the amount of medicine needed. Pour the medicine into the glass until the bottom of the meniscus is at the level desired.

Except for patients on a very limited fluid intake, a full glass of fresh water or fruit juice should be given with the medication. Some people have difficulty swallowing pills and capsules. If necessary a pill may be crushed



into powder and added to water or mixed with a small amount of soft food which can be easily taken. The contents of a capsule can be emptied and given in the same manner though it may be distasteful.

### **The technique of preparing and giving medicines**

1. Check the medicine cards or notebook with the Kardex or doctors' orders to make sure all are correct and needed changes have been made.
2. At the medicine cupboard, with the medicine tray and cups in place, read the name and dosage of the first medicine card (or book entry).
3. Check the medicine bottles for the correct medication and remove the bottle.
4. Check the label again before pouring.
5. Pour the correct amount of medicine from the bottle.
6. Check the label again while returning the bottle to its place in the cupboard.
7. Place the medicine cup on the tray with the medicine card or other identification.
8. Repeat until all medications due at that time are ready for giving.
9. After closing and locking the medicine cupboard, take the medicine tray to the first patient who is to receive medicine.
10. Greet and positively identify the patient.
11. Explain that you are giving the medication and any special information needed. Answer the patient's questions.
12. Give the medication with a glass of fresh water or other fluid.

13. Watch the patient take the medication, making certain it is swallowed.
14. Repeat with the other patients until all medications are given, then return to the service area.
15. Clean and care for equipment. Replace ready for use.
16. Record all medications given on the appropriate records with initials or signature as approved. Indicate any medication refused or withheld with the reason.

### **Administration of topical medications**

Topical medications are applied to a local area of the body. They may be applied to the skin, eye, ear, nose, vagina or rectum. The type of medication that can be applied and the absorption capacity of each area varies.

### **Skin applications**

The skin has limited ability to absorb medication, yet many problems of the skin and underlying tissues can be successfully treated by locally applying a suitable drug. **Ointments** contain a drug added to an oil base. The ointment melts on the warm skin and is absorbed into the tissues. They are useful for inflammations and infections. **Lotions** are liquid. They may have an all water base or may be partly oil. They are used to soften, soothe and protect the skin or to relieve itching. **Liniments** are liquids with an all water base that are rubbed on the skin to relieve painful, aching muscles. **Powders** are applied when a drying as well as a soothing action is desired.

A medical aseptic technique is used in applying medication to the skin unless it is broken or infected and a sterile technique is necessary. The skin should always be clean before medication is applied. It is often applied immediately after bathing or soaking the area.

Ointments are applied with an applicator. It may be applied directly to the affected area, or when it is to be covered by a dressing, it may be applied to gauze which is carefully placed over the affected area. However, the area is covered only if ordered by a doctor.

Apply the medication in a thin, even layer. Large amounts are unnecessary since there is limited absorption through the skin. The excess only gets on the clothing or bed linen. When applying powder, it must not be allowed to accumulate between folds of the skin. It is best for the nurse to put the powder on her own hands, then rub it on the patient.

### **Eye medications**

Liquid eye drops or ointment is used to soothe irritated eyes, treat eye disease, dilate or constrict the pupils, or to produce anesthesia. Both types of medication are applied using sterile technique. Most pharmaceutical companies prepare eye drops in small plastic bottles made so the sterile medication can be dropped directly from the bottle. If the eye medication is in a non-dropper bottle, a sterile dropper is used to withdraw it from the bottle and administer it to the eye. Only the amount of solution needed is withdrawn. Any unused solution is discarded. The medication is never allowed to go into the bulb of the dropper as tiny particles from the rubber may contaminate the solution. The dropper is held with the bulb up and the tip pointing downward at all times. Eye ointment is prepared in small tubes and applied directly from the tube to the eye. Only ointment in tubes with the words, 'For ophthalmic use' should be used in the eye. Other types of ointment may seriously harm the delicate eye tissues.

Before applying medication, the eye lid and lashes are cleaned with sterile cotton balls moistened with sterile normal saline. The lid is wiped from the inner canthus to the outer canthus with a moistened cotton ball only



once and the cotton ball discarded. It is repeated until the eye is clean.

Medication is applied to the eye with the patient either lying in bed or sitting in a chair. Ask the patient to turn the head slightly to the side and tilt it back.

The nurse rests the hand holding the medication lightly on the patient's forehead. With the other hand, pull down on the lower eyelid to expose the conjunctival sac. Drops are dropped into the center of the conjunctival sac. Ointment is squeezed from the tube along the entire conjunctival sac beginning at the inner canthus and going to the outer canthus. Discontinue the ointment by releasing pressure on the tube and twisting it. Provide a cotton ball to the patient to wipe away excess medication. The patient, who has been given eye drops, should close the eye gently and move the eyeball around to spread the medication to all areas of the eye. The eye should not be squeezed as that pushes the medication out of the eye. When ointment has been applied, the eye should be kept closed a full minute to allow the ointment to melt.

Leave the patient comfortable, care for the equipment and record the medication indicating which eye was treated.

### **Ear medications**

These are used for the purpose of relieving pain, treating infection or softening wax (cerumen). Ear medications are prepared as solutions that are used as drops. Sterile technique is required if the tympanic membrane is ruptured. Ear drops are often prepared in a plastic dropper bottle. If the solution is in a non-dropper bottle, the drops are instilled with a medicine dropper. The medication is warmed to body temperature either by holding the container in the hand or by placing it in a basin of warm water.

For instilling ear drops, the patient lies on the unaffected ear. Because the shape of the ear canal is different in

adults and children, slightly different techniques are used to straighten the canal to instill drops. The ear of an adult is grasped at the top of the pinna and pulled upward and backward to straighten the canal. The child's (under three) ear is grasped at the top and pulled downward and backward to straighten the canal.

The required number of drops are instilled and the patient kept on the side for 5 to 10 minutes. Loose cotton to absorb medication may be put in the ear for a short period of time. Cotton is not left in the ear canal unless ordered by a doctor. Cotton packed firmly and left in the ear canal is believed by some to aid the growth of bacteria and increase the ear problem.

Leave the patient comfortable, care for the equipment and record the medication indicating which ear was treated.

### **Nasal medications**

Nosedrops and sprays are used to relieve congestion in the nasal passages. They are prepared in a water base. Oily preparations are not used because of the possibility of aspirating some into the lungs where it could cause pneumonia. Good medical aseptic technique is used when administering either drops or spray to the nostrils.

To instill drops, the patient sits with the head tilted back or lies on his back with a pillow under his neck and shoulders to permit his head to tilt over the pillow. The same effect is obtained by the patient moving his head to the edge of the mattress and allowing it to hang over the edge of the bed. The tip of the dropper or the dropper bottle is held just inside the nostril but not touching the inside of the nostril as that would cause sneezing. The correct number of drops are instilled and the dropper removed. Repeat in the other nostril if needed. The patient should remain in the same position for about five minutes.



Nasal spray is administered with the patient in the sitting position with the head tilted back. As the medication is sprayed into one nostril, the patient holds the other nostril closed and inhales. Repeat in the other nostril. The patient keeps his head back for a few minutes. Many patients prefer to do their own nasal spraying. They may be permitted to do it after doing it satisfactorily under supervision.

The patient is made comfortable after nasal medication, the equipment cared for and the medication recorded in the patient's chart.

### **Inhalation**

This is the deep breathing of vapor or gas into the lungs for a local effect on the air passages or for a systemic effect. (e.g. relief of bronchial spasms) Absorption is very rapid from the mucous membranes of the nose and lungs because of the rich blood supply. Some drugs that are inhaled produce an instant effect because the medication is quickly carried to the brain from the nose or lung tissue.

The medication to be inhaled is sometimes prepared in a small ampule that is broken and the contents inhaled. The medicine is usually evaporated in 15 to 20 minutes. Some medication comes in a special inhaler, the cover is removed, and the inhaler held to the nose as the fumes are inhaled. Sometimes medication is added to a steam humidifier which vaporises it and the vapor is inhaled.

### **Vaginal medications**

Anti-infective drugs, anti-pruritic and hormone preparations are commonly needed for treating vaginal problems. They are prepared in the form of creams, jellies, foams, tablets and suppositories. Solutions are prepared to use as a douche (irrigation). The administration of either form of medication requires privacy, a good light and the patient in the dorsal recumbent position with the



knees flexed. A Sim's position may be used if the dorsal recumbent position is difficult for the patient.

Vaginal creams come in a tube with an applicator consisting of a barrel and a plunger. The barrel tip will screw on the end of the tube of medication. The amount of cream needed is squeezed into the barrel and the barrel unscrewed from the tube. The tip of the applicator is lubricated with water or lubricant and inserted into the vagina. The medicated cream is pushed from the barrel with the plunger and the applicator removed from the vagina. The vulva is wiped and the patient made comfortable. If the applicator is disposable, it is discarded. If it is re-usable, it is cleaned and put in its place.

A glove is worn for inserting a vaginal suppository or tablet. The index finger (forefinger) is lubricated and with it, the suppository or tablet is held, lubricated and inserted. The medication will melt in the warm vagina. A pad or cloth is placed over the perineal area to prevent soiling of the patient's clothing. The doctor may prefer for the patient to lie down for some time to permit the medication to get to all areas of the vaginal cavity.

A douche is valuable for several problems. A solution may be used to balance the pH of the vaginal secretions (normally slightly acid), for antiseptic cleansing, as preparation for surgery, or for local application of heat. A douche is given with a special douche tip attached to the tubing of a container that will hold at least 1000 ml of solution. The temperature of the solution should be checked with a thermometer and be 40.5°C to 43.3°C (105° to 110°F). The patient voids just before the procedure is done. She should lie on the bed in the dorsal recumbent position with the knees flexed. Sitting on a commode or bedpan is not satisfactory because the solution may not get to all areas of the vagina. Protect the bed with a waterproof protection under the hips.

Place a bedpan under the patient. Expose the perineal area and wash if necessary.

Hold or hang the container of solution so it is 45 to 60 cm (18 to 24 inches) above the level of the vagina. Allow a small amount of the fluid to flow through the tubing into the bedpan to remove the air. Moisten the douche tip with the solution to lubricate it. Clamp the tubing. Insert the douche tip about 9 to 12 cm (3 to 4 inches) into the vagina. Unclamp the tubing to allow the fluid to flow. Rotate the douche tip so the solution comes in contact with all areas of the vagina. When all the solution has been used, remove the douche tip. Assist the patient to a sitting position on the bedpan for a few minutes for remaining fluid to drain from the vagina. The patient should again lie on the bed. Remove the bedpan, dry the perineal area and make the patient comfortable. Remove and care for the equipment. Record the douche on the patient's chart with the name, strength and amount of solution used.

## ADMINISTRATION OF PARENTERAL MEDICATIONS

### Types of parenteral injections

Parenteral administration refers to giving medication by injection into or under the skin. Injections may be :

Intradermal — into the dermis layer of the skin.

Subcutaneous — under the skin into the adipose tissue.

Intramuscular — into muscle tissue.

Intravenous — into the blood through a vein.

Intrathecal — into the spinal canal.

Intracardial — into the heart.

Intra-articular — into a joint.

### **Advantages and disadvantages of parenteral administration**

The advantages of giving medication by the parenteral route are, 1) there is no irritation to the stomach or intestinal tract, 2) gastro-intestinal secretions do not affect the medication, 3) the drug is almost all absorbed into the circulatory system, 4) the absorption of the drug is rapid, and 5) the patient's state of consciousness is no problem.

Disadvantages of the parenteral route are, 1) there is a possibility of introducing pathogenic organisms into the tissues and 2) there is no way to retrieve the medication after it is given. Tragic results are prevented by using very careful sterile technique and by careful checking of the medication and its actions before it is given. Dangerous medications are checked by a second nurse before giving. A nurse may refuse to give a dangerous medication, or she may request a doctor to be present when it is given if she feels uncomfortable about it. If a mistake is made in giving a parenteral medication, it must be immediately reported to the doctor to enable him to order another medication to counteract the first one should he believe it necessary.

Injections are contraindicated in areas of inflammation, infection or edema. An injection is not given into scar tissue because it does not contain blood vessels. There would be no absorption or very slow, delayed absorption.

### **Equipment for giving parenteral medications**

A syringe, needle, an antiseptic, cotton balls and the medication are necessary for giving parenteral medications.

### **Syringes**

There are several types of syringes. The most common are the standard hypodermic syringe, the tuberculin



syringe and the insulin syringe. Some syringes are made of glass and resterilized after each use. Plastic syringes are available in sterile, individual packets and are meant for disposal after one use.

Syringes have two parts, a barrel and a plunger that fits inside the barrel. The plunger has a wide, flat surface at the top called the flange. Only the flange portion of the plunger may be touched when preparing and giving an injection. The barrel may be touched anywhere on the outside except the tip. The outside of the barrel contains markings in milliliters. The most commonly used sizes of hypodermic syringes for giving injections are the 2 ml and 5 ml size. 10 and 20 ml sizes are used in special cases. Tuberculin syringes have a small, slender barrel holding 1 ml. It has markings to make it easy to give very small amounts of medication. An insulin syringe is the same size and shape of a tuberculin syringe, but with markings in units especially for insulin.

**Needles** have a hub, that fits on the tip of a syringe, and a long, slender shaft. The shaft has a flat surface diagonally across the end called the bevel. The tip of the bevel is very sharp for piercing the skin. It should not be blunt or have hooks that would damage the tissues and be painful when inserted. There is an opening through the inside of the shaft through which medication goes into the tissues. It is called the lumen of the needle. Only the hub of a needle may be touched when preparing to give an injection.

The size of needles is according to the diameter of the lumen. Common sizes of needles are from 18 to 26 gauge, with the largest number being for the smallest size lumen. The gauge of the needle is selected according to the viscosity of the medication to be given. Some thick, oily preparations may require a 20 or 18 gauge needle. Water base preparations are given easily with a 22 or 25 gauge needle.

The length of needles vary from 0.6 cm to 5 cm for most injections. The length of the needle selected is according to the site of the injection and the size of the patient. A very short needle (0.6 cm) is best for an intradermal injection. An intramuscular injection for an adult will require a 3.5 cm to 5 cm needle, but for a baby, a 2.5 cm needle is sufficient.

### **Parenteral medication containers**

Medications for parenteral use is available in two types of containers, **vials** and **ampules**. Vials are small glass bottles with a rubber top held in place by a metal band. A vial may contain a single dose or it may contain multiple doses. An ampule is all glass with a smaller neck near the top where it can be broken to remove the medicine. It has a flat bottom for setting it upright. Careful sterile technique is used for taking medicine from vials and ampules. The **three checks** are observed in preparing injections as is done for all other medications.

#### **Removing medications from vials**

1. Clean the rubber top with an antiseptic moistened cotton ball using a circular movement. Discard the cotton.
2. Prepare the syringe and needle, making certain the needle, syringe tip, barrel inside, and the plunger are kept strictly sterile.
3. Draw as much air into the syringe as the amount of solution you plan to take from the vial.
4. Insert the needle through the rubber top of the vial and push the air into the vial.
5. Hold the vial upside down at eye level and pull on the plunger to withdraw the solution. The bevel must be kept covered by the solution in order to withdraw it.

6. Push air bubbles that come into the syringe, back into the vial.
7. The syringe should be held straight upward and be free from air to correctly read the amount of medication in it. There should be slightly more medication in the syringe than required before removing the needle from the vial.
8. Remove the needle from the vial, keep it pointing upward, and pull back very slightly on the plunger to aspirate the fluid from the needle into the syringe.
9. Slowly push the plunger until one drop of solution appears at the bevel of the needle. If there is any excess medication in the syringe, point the needle downward and slowly expel the excess into a waste container.
10. Cover the needle with its sterile guard.

### **Removing medication from ampules**

1. Make sure all medication is in the bottom part of the ampule. Any that is in the upper part of the vial will go to the bottom if the top is flicked a few times with a finger.
2. Clean the neck of the ampule with an antiseptic moistened cotton ball with a circular movement around the ampule.
3. Prepare the syringe and needle keeping the needle, syringe tip, barrel inside, and the plunger sterile.
4. Break the ampule at the neck by covering it with a cotton ball or gauze. Hold the bottom with the fingers of one hand and the top with



the other hand. Apply pressure until the top pops off.

5. Hold the ampule firmly between the thumb and fingers of one hand. Pick up the syringe and needle with the other hand. Put the needle into the ampule being very careful not to touch the edge of the opening.
6. Draw the solution into the syringe by pulling on the plunger until the amount needed is obtained. The needle must be kept in the solution to prevent drawing air into the syringe.
7. Remove the needle from the ampule without touching the opening.
8. Pull back on the plunger to aspirate the fluid from the needle into the syringe.
9. Expel air bubbles from the syringe while holding it upright, then slowly push the plunger until one drop of solution appears at the bevel of the needle. Discard excess medication.
10. Cover the needle with its sterile guard.

### **Subcutaneous injections**

Medications are given subcutaneously when one milliliter or less of solution is to be given and when quick absorption is not necessary. In large persons  $1\frac{1}{2}$  to 2 ml may sometimes be given. With the medication placed just under the skin, the absorption is slower than when it is given deep in the muscles where there are more and larger blood vessels. However, subcutaneous absorption is faster than for orally administered medicines.

The most frequently used site for subcutaneous injections is the lateral aspect of the upper arms. The anterior thighs and the abdominal wall are good sites and especi-

ally useful to a person giving his own injections as is often done by those having diabetes mellitus. The upper back (scapular region) is satisfactory to use for patients requiring frequent injections.

A 1 or 2 ml syringe and a 25 gauge, 1.25 cm or slightly longer needle are usually used for giving subcutaneous injections. An insulin syringe is used for giving insulin which is given subcutaneously. A tuberculin syringe is used for giving very small amounts of medication.

The needle is inserted into the subcutaneous tissue while being held at a 45 to 60 degree angle depending on the obesity of the patient. For a thin or average weight person, it would be held at a 45 degree angle. A person with excessive fatty tissue under the skin needs to have the medication injected deeper. The needle may need to be held at a 60 degree angle to get the solution in the correct place.

### **Subcutaneous injection technique**

1. Calculate the volume of medication needed.
2. Take the medication from the vial or ampule doing the necessary checking to ensure the correct medication and dosage.
3. Take the medicine card, syringe and needle, and an antiseptic moistened cotton ball on a tray to the patient's bedside.
4. Positively identify the patient.
5. Give the patient an explanation of what is going to be done, provide privacy and sufficient light.
6. Expose the site of the injection.
7. Cleanse the site with the antiseptic moistened cotton ball using a circular movement from the center outward.

8. Allow the skin to dry.
9. Remove the needle guard from the needle being careful to keep the needle sterile.
10. Pinch the patient's skin at the selected site to make the skin taut.
11. Hold the syringe between the thumb and index finger and quickly thrust it through the skin at a suitable angle.
12. Release the hold on the skin. Hold the barrel of the syringe with one hand and the plunger with the other.
13. Gently pull back on the plunger. If blood appears in the syringe, the needle is in a blood vessel. The needle should be withdrawn from the skin and the medication, needle and syringe discarded. Prepare another dose of the medicine in a sterile syringe and needle.
14. If no blood appears in the syringe, push the plunger slowly and smoothly to inject the solution into the tissues.
15. Place the fingers of one hand on the patient's skin near the needle to hold it down while the needle is quickly removed.
16. Massage the injection site gently with the cotton ball, then discard it.
17. Make the patient comfortable.
18. Take the equipment to the service area. Clean or discard the syringe and needle as necessary.
19. Record the medication on the patient's chart including the site.

### **Intramuscular injections**

Medications are given intramuscularly instead of subcutaneously for one or more of several reasons. Absorption



is faster deep in the muscles where there are many blood vessels. A larger amount of solution can be given in the muscles. Drugs that are irritating and painful in the subcutaneous tissue are usually less painful when given deep in the muscle because of fewer nerve endings there.

Several sites are suitable for giving intramuscular injections. The deltoid muscle of the upper arm may be used for injections of one ml or less. The lateral and anterior aspects of the quadriceps muscles of the thighs may be used and are especially recommended for babies whose gluteal muscles are not yet well developed. The upper, outer quadrant of the gluteal muscle (the buttocks) has been the site most often used in adults.

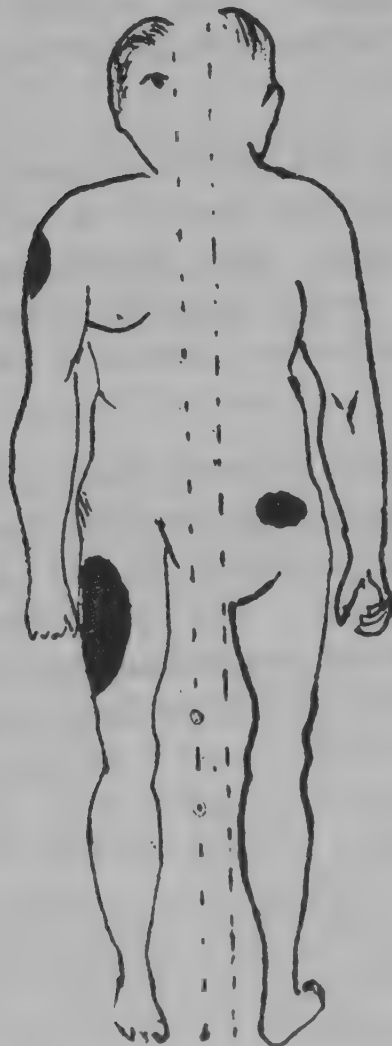


Fig. 11 — Site of I. M. Injections

Diagrams of the pathway of nerves and blood vessels should be carefully studied to understand their location. Injections are given well away from them. An injection can seriously damage a nerve if a needle touches or pierces it. A medication given intramuscularly that accidentally enters a blood vessel could have either of two results. It could produce a much quicker action than desired, or if the drug is unsuitable for direct injection into the blood, a severe reaction including death could occur.

Usually a 2 or 5 ml syringe is used. Not more than 5 ml of any medication is injected into an intramuscular site at one time. A 22 gauge needle, 3.5 cm to 5 cm in length is most suitable. The length of the needle is chosen according to the size of the patient.

The same principles and techniques are used as in giving a subcutaneous injection except a larger gauge and a longer needle is used. The needle is inserted at a 90 degree angle and deep into the muscle tissue while pinching the patient's skin to hold it taut.

The Z track technique is used when giving an especially irritating drug by the intramuscular route. The syringe, needle and the preparation is the same as for any intramuscular injection. The difference is in the way the skin is held. After preparing the injection site, place the edge of the palm and little finger lateral to the site and pull the skin laterally until it is taut. With the other hand, the needle is inserted quickly at a 90 degree angle. The thumb and index finger of the hand holding the skin can be used to steady the syringe as the needle is aspirated and the medication slowly injected. Wait a few seconds, then remove the needle. Release the taut skin only after the needle is removed. The skin will cover the needle opening and prevent leaking. The site should not be massaged.

### Intradermal injections

These are given just under the epidermis into the dermis layer of the skin. It requires great skill to get it in the correct place. The anterior surface of the arm is usually used. When many injections are required, as in giving allergy tests, the subscapular area provides a good site. The most common reason for giving intradermal injections is for diagnosing a sensitivity or the cause of an allergy. Very small amounts of medication are given. A tuberculin syringe with a 25 to 27 gauge needle of 0.6 cm to 1.25 cm length are the most satisfactory for intradermal injections. Prepare the medication and injection site with the same strict technique and principles practiced in giving other injections, then :

1. Stretch the skin at the site taut by placing the hand under the patient's forearm and using the heel of the palm and all the fingers to stretch the skin.
2. Hold the syringe at a  $10^{\circ}$  to  $15^{\circ}$  angle with the bevel of the needle up.
3. Slowly insert the needle until the bevel cannot be seen.
4. Aspirate the needle to make sure no blood vessel has been entered.
5. Inject the medication slowly. Blanching of the skin and the raising of a small wheal will occur at the site.
6. Remove the needle.
7. Do not massage the site as that would spread the medication. Wipe any wetness of the skin very lightly with cotton.
8. Give instructions to the patient about the injection as necessary.



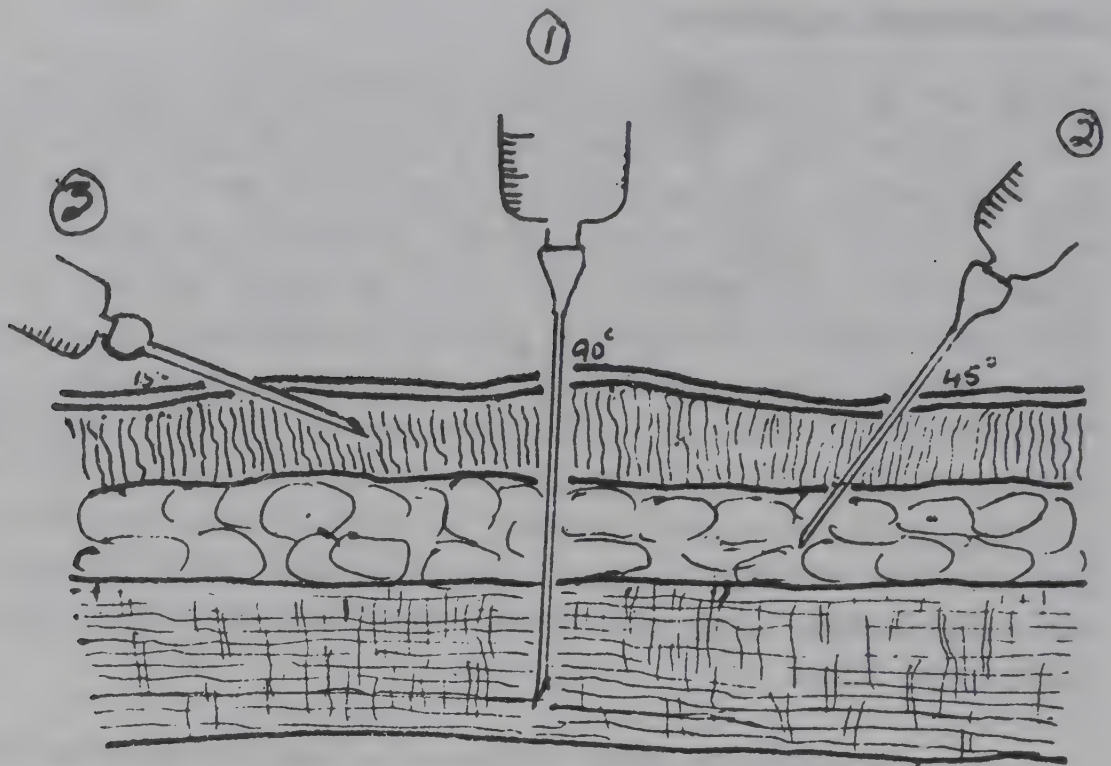


Fig. 12 — Position of Needles

1. Intramuscular
2. Subcutaneous
3. Intradermal

### Intravenous injections

The most rapid action from a medication is obtained by injecting it into the blood through a vein. There are many times that quick action is necessary in an emergency. There are non-emergency situations in which quick action is necessary. Some medications are more suited to giving by the intravenous route than any of the other routes. If the patient is receiving an intravenous infusion, the medication can usually be given along with it. If a patient is not getting an infusion, the medication is given with a syringe using the same technique as for starting an infusion (described in chapter 16). Very strict sterile technique must be followed to prevent bacteria from entering the blood stream. Careful checking of the medication must be done to make sure the right medicine and the right dose are given because of the speed of its action. All

medications injected directly into a vein must be given very, very slowly.

Intrathecal, intracardial and intraarticular injections are given only by a doctor. A nurse will obtain the equipment and assist the doctor with the procedure. Strict sterile technique is necessary. It may be done in the operating theatre.

### **Summary**

Giving medications to a patient may appear as a simple act to the patient and to others. However, it is a very complex task taking into account safety, drug actions, reactions and interactions, the route of administration and suitable technique in preparing and giving the medication. Nurses need a good knowledge of pharmacology, but that is not sufficient to satisfactorily administer medicines. Anatomy, physiology, microbiology and hygiene are all practiced in giving medicines. The matters of clear instructions, labels and recording of medicines are of foremost importance.

### **Additional Study Topics**

1. Drug allergies and their treatment.
2. Drug interactions.

### **Learning Activities**

1. Make a list of the safety rules of your hospital regarding storing, preparing and giving medications.
2. Practice the technique of giving subcutaneous and intramuscular injections using a rubber ball or similar object.
3. Practice removing liquid from a vial with a syringe and needle.

## **UNIT V**

### **TERMINAL NURSING CARE ACTIVITIES**



## **CHAPTER 21**

### **TERMINAL NURSING AND DEATH CARE**

#### **CHAPTER CONTENTS**

**Beliefs about death**

**Informing a patient of approaching death**

**Emotional reactions to death**

**Religion and death**

**Meeting the physical needs of the terminally ill**

**Signs of imminent death**

**Pronouncement of death**

**Donation of body organs for transplants**

**Care of the body after death**

#### **LEARNING OBJECTIVES**

- 1. A patient's emotional reaction to approaching death and providing supportive care.**
- 2. Signs of imminent death.**
- 3. Care of the body after death.**

## **TERMINAL NURSING AND DEATH CARE**

Terminal illness has been defined as “an illness from which recovery is beyond reasonable expectation.” Death is a natural part of nature and human life. There has been an increased interest in death in recent years. The physical and emotional changes and needs of the person facing the experience have received much attention. Special studies have been done in order to understand better how to help patients as they approach death.

### **Beliefs about death**

People have various ideas of death. Some are the result of having been present at the death of a family member. Other ideas come from cinema films and dramas that often picture death in relation to violence or some other dramatic experience. While some deaths do occur as a result of violence or accidents, most deaths take place in the home or in a hospital as a result of illness that interferes with body function to the extent that life cannot continue. The dramatic presentations of death cause many to have unnecessary fears of death, especially of it being a painful experience.

Many look upon death from a religious viewpoint as a changing from life on earth to another unknown life which is associated with rewards and punishment according to the kind of life lived here. Some people look upon death as a total and permanent cessation of consciousness. A person's approach to death depends upon his beliefs about it. Some people have pushed the thought of death away, but as it approaches, they have many questions and fears they wish help with, but do not know how to ask.

### **Informing a patient of approaching death**

It is the responsibility of the patient's doctor to inform him that his disease or injury is incurable. Sometimes

the patient's family do not want the patient told of the terminal nature of his problem. However, it has been found that persons, who cannot recover, understand that death is near without being told and that they appreciate the medical personnel and their family talking openly with them about death. Some patients have stated that they felt very isolated and alone facing death until the subject was discussed with them. It is a comfort and strength to a patient to know that others understand he is dying and stay near him. It gives the patient freedom to express his concerns and feelings. Many people approaching death have concerns about the welfare of family members, the disposition of property or getting business affairs in order. They are more likely to be relaxed and peaceful when given an opportunity to help arrange such matters.

### Emotional reactions to death

Those who have studied the process of death and the reactions of people to the experience have concluded that there are five stages of emotional reaction most people go through. In **Stage One**, the patient's response is denial of the fact, saying by his actions, "No, not me." The person may avoid speaking about his health, but go to many different doctors searching for a cure. In **Stage Two**, there is anger and the question, "Why me?" The patient may be critical of many things and easily irritated. The reaction must be accepted as normal, with concern and care shown toward the patient. **Stage Three** has been termed the 'bargaining' stage with the patient saying, "Yes, me, but..." The anger subsides. The patient may make promises to God of what he will do if he can only recover or live a little longer. In **Stage Four**, depression is the main emotion with the expression being, "Yes, me." The patient usually speaks less, but cries easily and frequently. It is helpful for a family member or the nurse to stand or sit quietly beside the patient during the depression period. **Stage Five** is the time of acceptance with the patient's attitude being,



**"I am ready."** The patient is at peace. He may live for a long time in this stage. The body seems to be able to cope better with disease when the patient is mentally and emotionally at peace.

The length of each stage varies greatly in different people. One stage may last for weeks or months in one person, but only days or even hours in another person. Understanding and acceptance of the person during the stages is very important to him. He often needs help in reaching the stage of acceptance.

### **Religion and death**

Death is an experience of human life that is associated with religion. People look to their religious beliefs for help when death is near. Many people approaching death receive comfort and peace from a strong faith in God as a supreme, merciful, loving being who, when asked, forgives sins that have been committed. Hospital chaplains are always ready to serve dying patients. Where one is not available a pastor or priest can often be called.

A nurse needs to establish her own beliefs about death, the existence and character of God, and what happens to the spirit at death in order to be comfortable with patients facing the experience. She must be able to give encouragement, comfort and strength to the patient and family members. She must be ready to assume the responsibilities of a priest or pastor when one cannot be summoned in time to aid the patient with spiritual advice and consolation.

### **Meeting physical needs**

A patient, in the terminal stages of a disease, is given all the nursing care possible to ensure the most comfort and freedom from pain. Physical comfort is important as well as emotional and spiritual comfort.

Patients, who can take food, seem to do best if given only small amounts of soft, easily digested food. Large amounts may cause discomfort due to decreased gastrointestinal activity. Nutrients and fluids are given intravenously when they are not tolerated orally. Sips of water are given as long as the swallowing reflex is present. When there is a swallowing problem, gauze soaked with water may be placed in the patient's mouth for him to suck and moisten the mouth.

Mucus that collects in the throat is removed by placing the patient in a lateral position, wiping it away, or by suctioning. Frequent oral hygiene is done to keep the mouth free of dried secretions, and feeling fresh to the patient. Vaseline or cream is applied to the lips to keep them soft. The nostrils are kept clean and lubricated as necessary. The eyes are cleaned with cotton balls moistened with normal saline. Lubricating drops or ointment may be applied to the eyes.

The patient may perspire profusely even though the skin feels cool. Bathe the patient and change linen as needed. Light weight bed covering should be used. Heavy covering seems to be uncomfortable to dying patients. If the patient is seen picking at the bed linen, it may be because it feels heavy or binding to him.

Urinary and fecal incontinence often occur due to a relaxing of the sphincter muscles. Pads are used to keep the bed linen from being soiled. The patient is checked frequently and pads or linens changed as necessary. The patient's skin is washed and dried each time it is soiled.

Frequent change of position adds to the patient's comfort. Use pillows for support. Make sure the position permits easy breathing.

Pain is a great problem in some diseases. The doctor orders sufficient medication to control pain. It must be given as frequently as permitted. If it does not



adequately control the pain, inform the doctor. Nursing measures for pain are used to make the patient comfortable on a minimum of medication. Perhaps it is the pain of an illness that causes people to think dying is painful. However, death itself is not painful, but rather a release from pain.

There is a tendency to keep light subdued in the room of a sick person, thinking it may be irritating to them. As death approaches, more light is needed. As other body activity decreases, there is also a decrease in visual ability. The patient should be able to see those around him. Dimness and shadows are confusing and increase a sense of loneliness.

Touch is an important method of communication with a dying person. The patient appreciates someone holding his hand or placing a hand on an arm, his head or some other part of the body. It conveys a feeling of caring and concern. Quiet, encouraging conversation to the patient is helpful. Speak in a normal voice to the patient or to others in his presence. Do not speak in a whisper in the patient's presence. It is very distressing to most sick people. Hearing is believed to be the last sense to disappear. Weeping is discouraged in the patient's presence or nearby.

### **Signs of imminent death**

People live for varying lengths of time in the terminal stage of illness and require much attentive nursing care. Death comes suddenly to some, but to many others, it is a progressive process. There are signs that begin to appear shortly before death to indicate it is near. The signs are :

1. The appetite decreases along with the activity of the gastro-intestinal tract. Distention may develop.



2. Pitting edema develops, especially of the extremities and sacrum.
3. Movement and sensation are gradually lost, usually beginning in the feet and legs.
4. Reflexes disappear.
5. The temperature is elevated, but the skin feels cold and clammy.
6. The pulse becomes irregular, weak and fast.
7. The blood pressure falls as the peripheral circulation decreases.
8. The skin becomes cyanosed as circulation decreases.
9. The respirations become noisy.
10. The reflexes disappear.
11. The urine decreases.
12. Pain usually subsides.
13. Mental alertness varies.
14. Jaw and facial muscles relax with the expression becoming peaceful.

During this time, it is important for someone to stay with the patient, touching and speaking to him to prevent him from feeling deserted or alone. The family should be encouraged to remain at the bedside. The nurse should remain near and observe ways to improve the comfort of the patient. If no one from the family is present, the nurse should remain with the patient comforting and encouraging him.

### **Pronouncement of death**

In hospitals, it is the responsibility of a doctor to declare that death has occurred. The patient is usually

pronounced dead when no heart beat or respirations can be detected. Persons with no heart beat or respirations for some minutes, have in some cases been revived with cardio-pulmonary resuscitation and returned to a normal, healthy, active life. It is possible to prolong body function by mechanical means without any function of the brain. Advances in medical science make it difficult to accurately determine in some cases if death has actually occurred, or if it is possible to revive the patient. The advance of knowledge and technology make it very important that a doctor determine that death has come.

### **Organ transplants**

Transplants of body organs are becoming more common as technology and skill improve. The source of most organs for transplanting is from a person who dies of a cause that does not affect the health of the organ wanted. Because of the great benefit the donated organs are to the recipient, more people are requesting that their organs be used at their death. Such a desire needs to be known before death takes place and plans made for removal of the organ or organs. The nurse responsible for the patient's care helps prepare and send the patient for removal of the organ.

### **Autopsy**

An autopsy is required for those who die of unknown causes or if the death is the result of murder, suicide or certain accidents. Nurses should know the wishes of the local authorities regarding care to the body before sending it for the autopsy.

In most cases of death there are no unusual circumstances to be concerned about. The family arranges to take the body soon after death. The nurse should have determined in advance if there are special religious rites or family customs to be observed.

## Care of the body after death

When it is definite that death has occurred, the bed is adjusted to the flat position and the body placed in the supine position. Close the eyes by holding the lids shut briefly. Remove jewelry unless the family wishes it to remain. Make a list of all valuables and put them in a bag or container. A family member receives the articles and signs the list. The list is attached to the patient's chart.

Wash soiled areas of the body. Remove tubes if present. Change soiled dressings. Place a pad to absorb fecal or urinary drainage. Comb and arrange the hair neatly. Tie a bandage lightly under the jaw and over the head to hold the mouth closed. The body may be dressed in clothing provided by the family or wrapped according to hospital policy. The ankles and the wrists are tied together with bandage according to hospital policy or family wishes. Care must always be taken not to offend cultural or religious beliefs and practices of the people of the community.

If the body is placed temporarily in a morgue, a label containing the name, age, sex, hospital number and date is attached to the body. Other significant data may be required. The body must be handled gently and respectfully at all times. When the body has left the unit, notation is made on the patient's chart of the time and date it left the unit, by whom it was taken and where. It is wise that another staff member sign the chart as a witness.

The patient's unit is thoroughly cleaned and prepared for further use.

## Summary

There is reluctance to face the reality of death. Although life is prolonged for many people through medical



technology, the time of death comes for each person. Nurses help patients at this important time by being understanding and supportive of their emotional, spiritual and physical needs.

A major emotional need is for someone to be able to talk comfortably with them about death. A nurse, who has a satisfying faith in God, His concern for man, and His provision for the future of man, can speak with ease and encouragement to a person regarding approaching death. It is not necessary to know the theology of the patient's religion, but only to meet the needs he feels are important.

The physiological functions are cared for and the position changed to keep the patient comfortable. Medications are given as required to relieve pain.

After death, the body is given respectful care. It is treated with the same dignity and shielding from exposure as when life was present. The wishes of the family are followed unless there are legal requirements that make it impossible.

### **Additional Study Topics**

1. Management of organ transplant donors at the time of death
2. Religious concepts of death and of life after death.

### **Learning Activities**

1. Talk with several patients who know they have a terminal illness and determine the stage of their emotional reaction.
2. Assist in the care of a patient's body after death.

## APPENDIX

Name of test	Examination or purpose of test	Normal range	Abnormally low value may indicate	Abnormally high value may indicate
1	2	3	4	5
<b>I. Secretions and Excretions</b>				
<b>A. Urine</b>				
1. Urinalysis (routine)	Specific gravity	1.015—1.025	Diabetes insipidus Overhydration Kidney disease	Dehydration Glycosuria
	pH	4.5—7.5		
	Protein (albumin)	None present		Kidney disease Hypertension Heart failure Drug poisoning Toxemia of pregnancy Diabetes-mellitus
	Glucose	None present		
	Microscopic Cells :			
	Epithelial	None to a few		
	White blood	None to a few		Kidney and urinary tract disease
	Casts	None present		Kidney disease
2. 24 hour specimen	Quantity	1,000—1,800 ml/24 hrs.		
	Specific gravity	1.015—1.025		
	Sugar, albumin or bacteria	Negative		
3. Acetone	Presence in urine	Negative		Severe disturbance in metabolism



Amount of specimen	Care of specimen	Preparation of patient and comments
6	7	8
100—200 ml	Send to lab within 2 hrs. or refrigerate	Have patient collect first urine voided in the morning. Void into a specimen container if possible. Record on the chart that the specimen was collected and sent to the lab.
Total urine voided in 24 hrs	Keep cool. Send all to lab at end of 24 hours.	Inform patient and family of the procedure and purpose. Have patient void at the beginning and discard the urine. Write the time on the specimen container and chart. Put all urine the patient voids for the next 24 hours in the container. Measure and send all the specimen to lab.

As in A-1

1	2	3	4	5
4. Addis	Count of red blood cells, white blood cells, casts, epithelial cells	RBC : 0-450,00 WBC: 30,000— 1,000,000 Hyaline casts : 0—5000 (in a total 24 hour specimen)		
5. Chlorides, quantitative	To evaluate urinary excretion of chlorides	9 Gm. per liter (depends on intake)		
6. Dilution and concentration test	Concentration: a specific gravity of 1.026 or greater	Concentration: a specific gravity of 1.026 or greater, at least one specimen with a specific gravity of 1.030	Kidney tubule disease	
7. Glucose and blood tolerance or galactose tolerance test	For glucose  For galactose	Oral method : Blood : peak of not more than 150 mg per 100 ml of serum, return to fasting level within 2 hrs. Urine : negative Intravenous method : Blood: return to fasting level within 1 hour. Urine : negative	Hyperinsulinism Addison's disease	Diabetes mellitus Liver disease Hyperthyroidism

6	7	8
All urine voided in a 12 hour period.	Keep cool	<p>Give regular diet but no fruit.</p> <p>Withhold all fluid for 24 hours.</p> <p>After 12 hrs. without fluid, have patient void in a bedpan and discard urine.</p> <p>Save all urine for the next 12 hrs. and send all to the lab.</p> <p>The test aids in determining the type of kidney disease present.</p>
Total urine voided in 24 hrs	As in A-2	<p>Helpful in the management of cardiac patients on a low salt diet and in adjusting fluid and ion balance in post-operative patients.</p>
All urine voided each time a specimen is collected	Keep specimen covered and in a cool place until all are collected, then send to lab.	<p>Withhold food and fluid for 12 hours before starting test. Discard all urine voided during that time.</p> <p>Collect and save urine voided 12 hours after fasting began. Collect urine 1 hr. and 2 hrs. later. Send all specimens in separate containers to the lab with the time of voiding clearly marked on each. Record time of each voiding on patient's chart.</p>
Entire voiding		<p>Give glucose or galactose as ordered.</p> <p>Collect urine specimens at stated intervals.</p> <p>Lab technician will take blood specimen.</p> <p>Helps detect glucose metabolism disorders that are not severe enough to appear in fasting blood glucose levels.</p>



1	2	3	4	5
8. Guaiac test	For blood	Negative		
9. Estrogens	Presence in urine specimen	Male: 4-25 $\mu$ g in 24 hours Female : 4-60 $\mu$ g in 24 hours Pregnancy : to 45,000 $\mu$ g in 24 hours		
10. Grav-index	For pregnancy			
11. Ketone bodies	Presence in urine specimen	Negative		
12. Phenylketonuria (PKU)	To diagnose phenylketonuria	Negative		Phenylpyruvic oligophrenia
13. Urine culture	For presence of specific organism	None		
<b>B. Gastro-intestinal excretions</b>				
1. Stool :	For parasites	Negative		
gross	For fat,	Negative		
microscopic	bacteria	Negative		
	For blood			

6	7	8
100—200 ml		Random specimen. Catheterize if external bleeding is present.
Entire 24 hour specimen	As in A-2	
100—200 ml	As in A-1	Collect early morning specimen.
100—200 ml	As in A-1	Random specimen.
		Place cloth or absorbent paper under and send to lab when the infant urinates. May be tested on unit.
100—200 ml	Prevent contamination. Send to lab at once.	Catheterize patient or obtain clean-catch specimen if approved.
According to hospital policy.	Transfer stool to specimen container and send to lab at once. Keep warm for amoebas.	Obtain specimen by having the patient defecate in a bedpan.

1	2	3	4	5
2 Gastric analysis	Basal acid output (1 hour) Fasting residual volume Maximal histamine stimulation pH	0—6 mEq. Per Hour  Up to 50 ml  Males : 10-40 mEq. per hour Females 5-30 mEq. per hour Less than 2.0	Pernicious anemia Severe chronic gastritis Gastric carcinoma Pellagra	Peptic ulcer Certain type of gastritis Certain incrine disorders
3 Diagnex blue (Tubeless gastric analysis, Azure A)	For free hydrochloric acid	Positive for free gastric hydrochloric acid of 0.6 mg or more of the dye is found in the urine within 2 hours.		
C. Sputum	For bacteria (especially tubercle bacilli and pneumococci) For cancer cells	None  None		Presence of disease
D. Discharges from wounds or body cavities				
1. Smear	For bacteria	Negative		
2. Culture	For bacteria	Negative		
3. Papanicolaou smear	For cancer cells	Negative		



6	7	8
Entire amount of stomach contents aspirated each time unless otherwise ordered	Label each specimen in correct time sequence. Send to lab as soon as test is completed.	<p>Delay breakfast.</p> <p>Assist with intubation of patient.</p> <p>Have emergency drug tray and resuscitation equipment available.</p> <p>Patients with a history of allergy such as asthma should not be given histamine.</p> <p>Observe patient closely for reaction.</p> <p>Record time of injection and amount given.</p> <p>Explain to patient that he may feel flushed and warm.</p>
All urine voided each time a specimen is collected		<p>Follow hospital policy for the test.</p> <p>Record time of each voiding.</p> <p>Record time patient receives caffeine sodium benzoate and dye.</p> <p>Explain that dye will temporarily color the urine (green or blue).</p>
5—30 ml	Keep covered and send to lab as soon as possible.	<p>Usually in the early morning the patient coughs and expectorates directly into specimen container.</p> <p>Make certain the patient expectorates sputum and not saliva.</p> <p>Patient should not use mouth wash prior to specimen collection.</p>
Depends upon doctor or technician.	Maintain sterility. Send to lab immediately	<p>Assist as indicated.</p> <p>Dispose of applicators and equipment to prevent infection of personnel.</p>

1	2	3	4	5
<b>E. Serous fluids</b>				
1. Lumbar puncture	For bacteria, especially Meningococcus Pneumococcus Streptococcus Tubercle bacilli	} Negative		
	Reaction		pH 7.4—7.6	
	Specific gravity		1.001—1.010	
	Cell count		0—10	
	Pressure		100—200 mm water	
	Glucose		40—70 mg per 100 ml spinal fluid	
	Protein		15—45 mg per 100 ml spinal fluid	
2 Thoracentesis	For bacteria (especially tubercle bacilli) Pressure	Negative		
			—4 to —5 cm of water	
3. Abdominal paracentesis	For bacteria	Negative		
4. Pericardial aspiration	For bacteria	Negative		

6	7	8
-5 ml	Label specimens in order if more than one. Prevent contamination. Send to lab immediately.	Lumbar puncture done by doctor. Obtain signed consent if required. Follow hospital procedure. Assist as indicated.
aries according to doctor	As in E-1	As in E-1
-5 ml	As in E-1	As in E-1
-5 ml	As in E-1	As in E-1



1	2	3	4	5
F. Synovial fluid	Blood-synovial glucose difference	Less than 10 mg/100 ml		
	Differential cell count	Granulocytes less than 25% of nucleated cells		
	Fibrin clot	Absent		
	Mucin clot	Abundant		
	Nucleated cell count	Less than 200 cells per cu. mm		
	Viscosity	High		
	Volume	Less than 3.5 ml		

## II. Blood

### A. Hematology

#### 1. Hemogram

a. Red cell count	Red cells counted	4,500,000—5,000,000 per cu. mm. blood	Anemia	Dehydration Polycythemia
b. White cell count	white cells counted	5,000—10,000 per cu. mm. of blood		
c. Differen- tial count	Percentage of different kinds of white cells	Neutrophils 54%—62% of total white cell count		Bacterial infection
d. Hemato- crit (HCT)	Comparison of cells to volume of blood	Male: 40—50 vol/100 ml of blood Female: 35—40 vol/100 ml of blood	Anemia from hemorrhage Defective red cell formation or Excessive red cell destruction	Dehydration Polycythemia
e. Hemo- globin	Quantity of hemoglobin estimated	12—18 Gm./100 ml of blood Male: 14.5—16.5 Gm./100 ml of blood Female: 13.0—15.5 Gm./100 ml of blood		Same as HCT

6	7	8
2—5 ml	As in E-1	As in E-1
Sufficient for amount of anti-coagulant used.	Done by lab technician	Be sure that request forms are completely and correctly made out and sent to the lab. Assist technician as necessary. Record collection of the specimen on the patient's chart. Receive and place report on chart. Notify the doctor if necessary.
As in a.	As in a.	
As in a.	As in a.	This test differentiates types of white cells. The proportions of specific cells to all white cells have diagnostic significance.
As in a.	As in a.	This is the most satisfactory screening test for anemia.
As in a.	As in a.	Capillary blood is used. A finger or ear may be pricked.

1	2	3	4	5
f. Platelet	Platelets counted	200,000—500,00/cu. mm. of blood	Thrombocytopenic purpura Aplastic anemia Gaucher's disease Septicaemia	
g. Reticulo-cyte	Reticulocytes counted	0.2—2.0 per 100 red blood cells		
2. Coagulation time	Time it takes for blood to clot after removal from a vein	Depends on method used : 9—12 minutes (Lee-White method)		Liver disease Hemophilia Afibrinogenemia
3. Bleeding time	Time for a cut to stop bleeding	2—3 minutes		Thrombocytopenia Allergic purpura Scurvy Uremia
4. Sedimentation rate	Time for solid materials in blood to settle	10—13 mm in 1 hour (Westergren)		
<b>B. Chemistries</b>				
1. Acetone	Determine presence in body	Negative		
a. Qualitative		0.3—2.0 mg/100 ml		
b. Quantitative				
2. Amino acid nitrogen	As in B-1*	4—6 mg/100 ml		
* "As in B-1" means 1 under Blood — Chemistries				



6	7	8
As in a.	As in a.	
As in a.	As in a.	Indicates activity of bone marrow.
4 ml	As in a.	Check on method and procedure used in hospital laboratory.
A few drops.	As in a.	As in a.
As in a.	As in a.	As in a.
5 ml	Performed by lab technician	Follow hospital policy.
As in B-1	As in B-1	

1	2	3	4	5
3. Alcohol (ethyl)	As in B-1	Negative		
4. Amylase	As in B-1	5.5—30.5 I.U.		
5. Bilirubin	As in B-1			
a. Direct		Up to 0.4 mg/ 100 ml		
b. Indirect		0.4—0.8 mg/ 100 ml		
c. Total		0.5—1.4 mg/ 100 ml		
6. Bromosulphalein	To determine amount of dye in blood stream at end of 45 minutes	Less than 0.4 mg of bromosulphalein per 100 ml of blood		
7. Calcium				
a. Total	As in B-1	4.5—5.3 mEq/liter 9.0—10.6 mg/100 ml	Hypoparathyroidism Acidosis Celiac disease	Hyperparathyroidism Multiple myeloma
b. Ionized	As in B-1	Infants : 11—13 mg/100 ml 2.1—2.6 mEq/liter 4.2—5.2 mg/100 ml	Vitamin D deficiency Kidney disease Osteomalacia Rickets Sprue	Sarcoidosis Vitamin D intoxication
8. Carbon dioxide	As in B-1	Adults : 24—30 mM/liter Infants : 20—28 mM/liter	Diabetic and other forms of acidosis Kidney dysfunction Severe diarrhea Intestinal fluid loss Hyperventilation	Alkalosis Excessive intake of sodium bicarbonate overtreatment with ACTH Present in persistent vomiting or hyperventilation

6

7

8

As in B-1 As in B-1

As in B-1 As in B-1

As in B-1 As in B-1

As in B-1

As in B-1

Delay breakfast. May give water.

As in B-1

As in B-1

As in B-1

As in B-1

This measures the acidity or alkalinity of blood.



1	2	3	4	5
9 Chloride	As in B-1	95--103 mEq/liter	Common in severe vomiting and diarrhea Acidosis Heat exhaustion	Various kidney disorders Cushing's syndrome Hyperveni- lation
10. Choles- terol : total esters	As in B-1	150—250 mg/100 ml 65%—75 % of total		
11. Creatine	As in B-1	Males : 0.2—0.6 mg/ 100 ml Females : 0.6—1.0 mg/ 100 ml		
12. Creati- nine	As in B-1	0.5—1.2/100 ml		
13. Fatty acids, total	As in B-1	9—15 mM/ liter		
14. Fibr- inogen	As in B-1	0.2—0.4 Gm./ 100 ml		
15. Gamma globulin Globulin, total	As in B-1	0.5—1.6 Gm/ 100 ml 2.3—3.5 Gm./ 100 ml		

6	7	8
As in B-1	As in B-1	Indicates electrolyte balance of the blood. The body tolerates only a slight deviation from the normal range.
As in B-1	As in B-1	This is useful in assessing cellular damage in the liver.
As in B-1	As in B-1	
As in B-1	As in B-1	
As in B-1	As in B-1	
As in B-1	As in B-1	
As in B-1	As in B-1	

1	2	3	4	5
16. Glucose tolerance; oral	As in B-1	Fasting : 70—110 mg/ 100 ml 30 minutes : 30—60 mg above fasting 1 hour : 20—50 mg above fasting 2 hours : 5—15 mg above fasting 3 hours : fasting level or below		
17. Glucose	As in B-1	80—120 mg/ 100 ml of serum 70—105 mg/ 100 ml of whole blood		
18. Insulin tolerance	Differentiation between hypopituitarism and primary hypothyroidism	Fasting : 70—100 mg/ 100 ml 30 minutes : falls to 50% 90 minutes : fasting level		
19. Iodine, protein bound (PBI)	To determine function of thyroid gland	4.0—8.0 $\mu$ g/ 100 ml	Hypothyroidism	Hyperthyroidism
20. Magnesium	As in B-1	1.5—2.5 mEq/hour		
21. pH	As in B-1	7.35—7.45	Diabetic acidosis Uremia Lung disorders	



6	7	8
As in B-1	As in B-1	Give glucose according to hospital policy.
As in B-1	As in B-1	
As in B-1	As in B-1	
As in B-1	As in B-1	The doctor injects 0.1 unit of insulin intravenously. Have on hand a concentrated solution of glucose in a sterile syringe in case of a reaction. This is less sensitive than glucose tolerance
As in B-1	As in B-1	Patient should not receive iodides for at least 2 weeks prior to test or take iodine-containing contrast medium substances for x-ray for at least 6 months prior to test.
As in B-1	As in B-1	
As in B-1	As in B-1	Indicates hydrogen-ion concentration. The body tolerates only slight deviation from normal range.

1	2	3	4	5
22. Phosphatase, acid	As in B-1	1—4 King-Armstrong units		Cushing's disease Hyperventilation Excessive sodium bicarbonate intake
23. Phosphatase, alkaline	As in B-1	4—11 King-Armstrong units		
24. Potassium (K)	As in B-1	3.9—5.0 mEq/liter of serum	Cushing's disease Kidney disease Prolonged vomiting	Shock Adrenal cortical deficiency Hypoventilation Impaired kidney function
25. Rheumatoid arthritis rapid screening or Latex agglutination test (RA test)	For agglutination			Rheumatoid arthritis
26. Serologic test for syphilis	To determine presence of antibodies	Negative		
27. Sodium (Na)	As in B-1	138—148 mEq/liter of serum	Kidney disease Diabetic acidosis Excessive hydration Diuretics Addison's disease	Dehydration Hypothalamic injury Diabetes insipidus

6	7	8
As in B-1	As in B-1	
As in B-1	As in B-1	
As in B-1	As in B-1	Indicates electrolyte balance of the blood. Deviation from normal range may produce serious changes in heart rhythm, muscle function. Potassium intoxication may cause death.
As in B-1	As in B-1	Test is reasonably specific. An element in the serum of rheumatoid arthritics causes clumping of latex and globulin emulsion.
As in B-1	As in B-1	VDRL test. Use caution in explaining the test to patients.
As in B-1	As in B-1	Indicates electrolyte balance of the blood. The body tolerates only slight deviation from normal range.



1	2	3	4	5
28. Sulfonamides	As in B-1	Negative		
29. Transaminase SGOT or SGPT)	As in B-1	SGOT : 10—40 units SGPT : 5—35 units		For SGOT: myocardial infarction For SGPT: hepatitis, other liver diseases
30. Urea clearance	As in B-1	Maximum clearance : 64—99 ml/ minute Standard clearance : 41—65 ml/ minute or more than 75% of normal clearance		
31. Urea nitrogen (BUN)	As in B-1	8—20 mg/ 100 ml	Severe liver disease	Kidney malfunction Urinary obstruction Dehydration
32. Uric acid	As in B-1	Male : 2.1—7.8 mg/ 100 ml Female : 2.0—6.4 mg/ 100 ml		
C. Miscel- laneous 1. Blood cultures	To determine presence of specific organisms	None		Specific bacterial organism causing disease

6	7	8
As in B-1	As in B-1	
As in B-1	As in B-1	Transaminases are enzymes that catalyze transfer of amino acids to alpha keto acids. Glutamic oxaloacetic transaminase (SGOT) is released into circulation in abnormal amounts in heart injury. Glutamic pyruvic transaminase (SGPT) is released into circulation in abnormal amounts of liver damage.
As in B-1	As in B-1	
As in B-1	As in B-1	This is considered a more precise test for renal function than NPN
As in B-1	As in B-1	
As in B-1	As in B-1	Culture identifies organism by character of bacterial colony and its reaction to various media.

1	2	3	4	5
2. Blood grouping (typing)	To determine type of blood	Group distribution in South Indian population O—45%, B—30%, A—20%, AB—5%		
3. Cross-matching	To determine compatibility of two bloods			
4. Bone marrow examination	To examine blood cells		Granulocytopenia or increased erythropoiesis from blood loss Polycythemia or macrocytic anemia	Leucocytosis Leukemia Leukomoid reaction
5. Blood smear	To test for malaria and species of causative parasite	None		
6. Prothrombin time (PT or Pro time)	To indicate the ability of blood to form intravascular clots	12—15 seconds	Acute thrombophlebitis	Liver disease Vitamin K deficiency
7. Rh typing (Rh factor)	To determine presence in blood	Rh positive when Rho (D) factor is present. Rh negative when Rho (D) factor is absent.		



6	7	8
As in B-1	As in B-1	Be certain that specimen is accurately labeled and that requisition form is correctly made out.
As in B-1	As in B-1	
For smears : 1—2 ml Additional amounts depending on number of tests to be done.	Send to lab at once. Apply sterile dressing to site.	Sternal or iliac crest puncture. Follow hospital procedure.
As in B-1	Technician usually responsible for prompt handling	Parasites are found in greatest number when specimen is taken at peak of chills and fever.
As in B-1	As in B-1	Frequent evaluation of prothrombin time is necessary for determining dosage of anticoagulant.
As in B-1	As in B-1	Most important of the twelve Rh phenotypes is the Rho (D) type. Typing is essential for pregnant women and before administering blood.

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## GLOSSARY

- Abdomen** — The part of the body between the chest and the pelvis.
- Abduction** — Moving a part away from the midline or normal position.
- Abrasion** — A rubbing or scraping away of the skin.
- Acute** — A severe, short lasting illness or disease.
- Adduction** — Moving a part toward the midline or normal position.
- Aerobic** — Requiring air or free oxygen to live.
- Albumin** — One of a group of protein substances in animal tissue.
- Albuminuria** — The presence of albumin in the urine.
- Anaerobic** — The ability to live only in the absence of air or free oxygen.
- Anesthesia** — Partial or complete loss of sensation due to disease, injury or the use of drugs.
- Anesthetic** — A drug or other agent that produces loss of sensation.
- Antibiotic** — A drug made from living microorganisms that destroys other living microorganisms.
- Anticoagulant** — A chemical substance that prevents the clotting of blood.
- Antipyretic** — A drug or other agent that reduces fever.
- Antiseptic** — A chemical compound that stops the growth of microorganisms.
- Anuria** — A complete lack of urine production.
- Apnea** — The absence of breathing.
- Arrhythmia** — An irregular heart beat.
- Ascites** — The accumulation of serous fluid in the abdominal cavity.
- Auscultation** — Examining the body by listening to sounds.
- Aspirate** — a) Removal of fluid or gas from a cavity by suction.  
b) The drawing of foreign material into the lungs with the breath.
- Atelectasis** — Partial collapse of the air sacs of lungs.

- Autopsy** — The examination of the body and its organs after death in order to determine the cause of death.
- Axilla** — The area between the arm and the chest wall.
- Bacteria** — One-celled microorganisms. Some cause disease.
- Bradycardia** — Abnormally low rate of heart contractions.
- Bradypnea** — An abnormally slow breathing rate.
- Catheter** — A small tube used to remove fluid from a cavity especially from the bladder.
- Catheterization** — The insertion of a catheter.
- Celsius** — A temperature scale using zero degree as the freezing point and 100 degrees as the boiling point of water.
- Chaplain** — A religious leader serving the spiritual needs of persons in an institution, business or organization.
- Chronic** — Of long duration.
- Chyme** — Semi-liquid, partially digested food moving through the stomach and small intestines while undergoing continuing digestion.
- Circumduction** — The circular movement of a limb around its point of attachment to the body.
- Colon** — The large intestine.
- Coma** — A state of being unconscious.
- Communion** — A sacrament of the Christian church.
- Congenital** — A condition present before or at the time of birth.
- Congestion** — Abnormal accumulation of blood in any part.
- Conscious** — Awake and aware of the environment.
- Constipation** — Difficulty in passing feces.
- Contaminate** — To make unclean or unsterile.
- Contracture** — A state of permanent contracture (shortening) of a muscle causing deformity or limited movement of a joint.
- Contraindicated** — A certain line of treatment should be avoided or discontinued.
- Contusion** — A bruising of the tissues by a blunt object.

**Crisis** — a) A sudden decrease of body temperature. b) A sudden change or turning point in a disease for better or worse.

**Crutch palsy** — A weakness developing in an arm and hand due to pressure on a nerve in the axilla.

**Cyanosis** — Bluish color of the skin and mucous membrane due to a lack of oxygen.

**Dangling** — A patient sitting on the edge of the bed with his feet hanging at the side of the bed.

**Debility** -- A condition of weakness and lack of muscle tone.

**Decubitus ulcer** — A sore in which the skin and underlying tissues are destroyed due to pressure.

**Defecation** — The act of passing feces from the intestinal tract.

**Deficient** — Having a lack or insufficient amount.

**Degeneration** — Deterioration in structure or function.

**Dehiscence** — Separation of wound edges.

**Dehydration** — A decreased amount of fluid in body tissues due to a larger fluid output than intake.

**Depressant** — A drug or other agent that decreases mental and physical activity

**Dermis** — The second layer of skin, under the epidermis.

**Detoxification** — The process of neutralizing toxic substances.

**Diabetes mellitus** — A condition characterized by hyperglycaemia due to deficiency or diminished effectiveness of insulin.

**Diagnosis** — Recognizing a disease from its symptoms.

**Diarrhea** — Liquid or semi-liquid stools resulting from intestinal hyperactivity.

**Diastole** -- The period of relaxation of the heart.

**Distal** — The part farthest away from the midline or center.

**Distention** — A state of being stretched by fluid or gas.

**Diuretics** — Drugs that increase the production of urine.

**Dyspnea** — Difficult or labored breathing.

**Edema** — Swelling due to increase of fluid in the tissues.

**Electrolytes** — Chemicals that in solution separate into particles called ions, capable of conducting an electrical current.



**Embolism** — An obstruction of a blood vessel by a foreign substance such as a blood clot, air or fat.

**Embolus** — A moving substance such as blood, air or fat in a blood vessel.

**Emesis** — Vomiting of food and fluid from the stomach.

**Epidermis** — The first or top layer of the skin.

**Eupnea** — Normal breathing.

**Evaporate** — To convert from the liquid to the gaseous state.

**Exhalation** — The act of breathing out  
Breathing air out from the lungs.

**Expiration** — 1) The act of breathing out    2) Dying  
Breathing air out from lungs.

**Extension** — The straightening out of a flexed joint such as knee or elbow.

Straightening in order to make a flexed part straight.

**Extremities** — The limbs or the two arms and the two legs.

**Exudate** — A discharge or drainage from an inflamed area.

**Fahrenheit** — A temperature scale using 32 degrees as the freezing point and 212 degrees as the boiling point of water.

**Febrile** — Feverish; accompanied by fever.

**Feces** — The waste material expelled from the digestive tract.

**Flatus** — Gas accumulated in the intestines.

**Flexion** — To bend a body part.

**Fracture** — A broken bone.

**Gangrene** — Death of body tissue due to a lack of oxygen and nutrients.

**Gastric** — Refers to the stomach

**Gavage** — Giving feedings through a tube inserted into the stomach.

**Genitals** — Refers to the organs of reproduction.

**Hematemesis** — Vomiting of blood.

**Hematuria** — Blood in the urine.

**Hemiplegia** — Paralysis of both limbs on one side of the body.

**Hemoglobin** — The portion of the red blood cells that carries oxygen.

- Hemolytic** — Having the power to destroy red blood cells.
- Hemoptysis** — Coughing blood from the lungs or bronchi.
- Hemorrhage** — Excessive loss of blood.
- Hemostasis** — Stopping or slowing the flow of blood through a blood vessel or to an area of the body.
- Hiccough** — Intermittent spasms of the diaphragm which causes sudden expulsion of air from the lungs.
- Humidity** — Moisture in the air.
- Hyperextension** — Overextension of a limb or body part.
- Hypertension** — Blood pressure above normal.
- Hypertonic** — Having greater osmotic pressure than body fluids.
- Hypnotic** — Sleep producing.
- Hypodermic** — Beneath the skin or subcutaneous.
- Hypodermoclysis** — The giving of fluids in the fatty tissue under the skin.
- Hypotension** — Blood pressure below normal.
- Hypothermia** — Body temperature below normal.
- Hypotonic** — Having less osmotic pressure than body fluids.
- Hypovolemia** — A decreased volume of blood.
- Idiosyncrasy** — An abnormal, unexpected effect.
- Immobile** — Inability to move.
- Incision** — A smooth cut made by a sharp object.
- Incompatible** — Incapable of being together because of undesirable reactions occurring.
- Incontinence** — Inability to control the evacuation of urine or faeces.
- Infiltration** — The process of fluid passing into the tissues.
- Inflammation** — A reaction of the body to the injury of cells.
- Infusion** — Giving fluids slowly into a vein or the subcutaneous tissues.
- Inhalation** — Breathing in air, gas or vapour.
- Insomnia** — Inability to sleep.

- Inspection** — Examination of a person or object by looking at it.
- Inspiration** — The act of drawing in the breath.
- Ion** — An electrically charged atom or radical.
- Ischemia** — A deficient blood supply to any part of the body.
- Isotonic** — Fluids having the same osmotic pressure as body fluids.
- Laceration** — A cut with rough, irregular edges.
- Lumen** — The inside passageway of a tubular structure.
- Lysis** — A gradual return to normal.
- Macrodrop** — A large drop, usually one tenth of a milliliter (10 drops per ml).
- Metabolism** — The process by which food is changed to provide heat and energy to the cells.
- Microdrop** — A small drop, usually one sixtieth of a milliliter (60 drops per ml).
- Micturition** — The act of passing urine.
- Mobile** — Capable of movement.
- Mucous membrane** — A membrane that secretes mucus and lines many of the body cavities.
- Mucus** — A thick fluid secreted by cells in the mucous membrane.
- Naso-gastric tube** — A long, slender tube that is inserted through the nose into the stomach.
- Nits** — The eggs of head lice.
- Normal saline** — A solution of 0.9 gm of sodium chloride in 100 ml of water which is isotonic with body fluids.
- Obesity** — A state of being overly fat.
- Oliguria** — A decreased amount of urine.
- Palpitation** — Heart action of which the patient is aware.
- Palpation** — Examination by touch for making a diagnosis.
- Pallor** — Paleness of the skin and mucous membranes.
- Paralysis** — Loss of the power of movement.
- Paraplegia** — Paralysis of both legs.



- Parasites** — Organisms that live at the expense of another.
- Parenteral** — Giving fluids or food other than the alimentary tract.
- Pathogenic** — A disease causing organism.
- Pediculosis** — Head lice.
- Peristalsis** — Wave-like movements that carry the digesting food along the digestive tract.
- Personality** — A total of the characteristics that make each person distinctive and different from others.
- Phagocytosis** — The process of white blood cells ingesting foreign particles or cells.
- Phlebitis** — Inflammation of a vein.
- Polyuria** — An increased amount of urine.
- Posterior** — Behind a part.
- Proctoclysis** — Giving fluids slowly into the rectum.
- Prognosis** — The predicted outcome of a disease.
- Pronation** — Turning the palm of the hand downwards.
- Proximal** — Nearest to the midline or center.
- Puncture** — The act of piercing with a sharp object.
- Purulent** — Containing pus.
- Pyrexia** — An increased body temperature; fever.
- Pyrogenic** — Producing fever.
- Quadriplegia** — Paralysis of all four limbs.
- Rectum** — The last portion of the large intestine.
- Renal** — Relating to the kidney.
- Respiration** — Breathing in and out.
- Restraint** — To hold back; Straps or cloth to hold a patient and prevent injury.
- Retention of urine** — The inability to pass urine. Accumulation of urine in the bladder which is normally excreted.
- Rotation** — Turning around an axis.
- Sigmoid** — The portion of the large intestine just above the rectum.

**Singultus** — A hiccough.

**Sordes** — Hard, dry mucus crusting on the teeth and tongue.

**Spasm** — A sudden involuntary contraction of a muscle.

**Sphincter** — A muscle surrounding an opening.

**Sphygmomanometer** — An instrument for measuring the blood pressure.

**Sputum** — Mucoid material from the air passages.

**Suction** — The action of pulling or drawing, by means of reduced pressure

**Supination** — Holding the hand with the palm upward.

**Suppuration** — Formation of pus.

**Systemic** — Affecting the entire body.

**Systole** — The working period of the heart beat.

**Tachycardia** — A fast heart beat, over 100 per minute.

**Taut** — Stretched tightly.

**Thready** — Description of the pulse when the heart beat is weak and pushes a reduced amount of blood into the arteries.

**Therapeutic** — That which brings about healing.

**Thrombophlebitis** — Inflammation of a vein with the formation of a blood clot.

**Thrombus** — A stationary blood clot in the heart, artery or vein.

**Tolerate** — Capable of bearing.

**Toxin** — A poison; poisonous,

**Tranquillizer** — A calming drug or other agent.

**Transfusion** — Giving the blood of one person to another.

**Trochanter roll** — A sheet or large cloth made into a roll and placed along the thigh.

**Unconscious** — Totally unaware of surroundings.

**Urban** — Refers to the city.

**Ureter** — The tubes leading from the kidneys to the bladder.

**Urethra** — The tube leading from the bladder to the outside of the body.

**Urgency** — The sensation of needing to pass urine quickly.

**Ventilation** — To cause free circulation of air.

**Vertigo** — Dizziness. A feeling of rotation or going round.

**Viscous** — Sticky or semi-fluid.

**Viscosity** — The quality of a liquid of being sticky and resisting pouring.

**Void** — To pass urine.

**Vulva** — External female reproductive organs.

**Wheezing** — A whistling sound produced when breathing.

**Xiphoid process** — The bottom end of the sternum.



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## PREFIXES

Word part	Meaning	Word part	Meaning
a, an, ar	without or not	cysto	bladder
ab	away from	demi	half
ad	toward	derma	skin
adeno	glandular	dis	from
aero	air	dorso	back
ambi	around, on both sides	dys	abnormal, difficult
amyl	starch	en	into, within
angio	vessel	encephal	brain
ante	before, forward	entero	the intestines
anti	against, counteracting	eryth	red
bi	two, double	ex	out, out of, away from
bili	bile	extra	outside of, in addition to
bio	life	ferro	iron
brachio	arm	fibro	fiber
brady	slow	fore	before, in front of
bucca	cheek		
cardio	heart	gastro	stomach
cephlo	head	glosso	tongue
cervico	neck	glyco	sugar
chole	gall or bile	hemi	half
cholecysto	gall bladder	hemo	blood
chondro	cartilage	hepa, hepato	liver
circum	around	histo	tissue
co	together	hydro	water
colo	colon	hygro	moisture
colpo	vagina	hyper	too much, high
contra	against		
costo	ribs	hypo	under, decreased
cranio	head		

Word part	Meaning	Word part	Meaning
hyster	uterus	orchido	testes
ileo	ileum	ortho	straight,
in	in, within, into		normal
inter	between	os	mouth, bone
intra	within	osteo	bone
intro	in, within, into	oto	ear
juxta	near, close to	pan	all
laparo	abdomen	para	beside,
latero	side		accessory to
leuk	white	path	disease
lipo	fat	ped	child, foot
macro	large, big	per	by, through
mal	bad, poor	peri	around
mast	breast	pharyngo	pharynx
medio	middle	phlebo	vein
mega, megalo	large, great	pneumo	air, lungs
meno	menses	pod	foot
mono	single	poly	many, much
multi	many	post	after
myelo	bone marrow,	pre	before
	spinal cord	proct	rectum
myo	muscle	pseudo	false
naso	nose	psych	mind
neo	new	pyelo	pelvis of
nephro	kidney		the kidney
neuro	nerve	pyo	pus
nitro	nitrogen	pyro	fever, heat
noct	night	quadri	four
non	not	radio	radiation
ob	against,	reno	kidney
	in front of	retro	backward
oculo	eye	rhin	nose
odonto	tooth	sacro	sacrum
oophoro	ovary	salpingo	fallopian tube
ophthalmo	eye	sarco	flesh

Word part	Meaning	Word part	Meaning
sclero	hard, hardening	tachy	fast
semi	half	thoraco	chest
skeleto	skeleton	trans	across
steno	narrowing, constriction	tri	three
stomato	mouth	ultra	beyond
sub	under	uni	one
super	above, excess	uretero	ureter
supra	above	urethro	urethra
syn	together	uro	urine, urinary organs
		vaso	vessel



## SUFFIXES

Word part	Meaning	Word part	Meaning
able	able to	oid	resemblance, likeness
algia	pain	oma	tumor
cele	tumor, swelling	opathy	disease of
centesis	surgical puncture to remove fluid	orrhaphy	surgical repair
cide	killling, destructive	osis	disease, condition of
cule	little	ostomy	to form an opening or outlet
cyte	cell	otomy	to incise
ectomy	removal of	pexy	fixation
emia	blood	phage	ingesting
esis	action	phobia	fear
form	shaped like	plasty	plastic surgery
genesis	formation, origin	plegia	paralysis
gram	tracing, mark	rhage	to burst forth
graph	writing	'rhea	excessive discharge
ism	condition	rhexis	rupture
itis	inflammation	scopy	to examine visually
ize	to treat	stomy	to form an opening
lith	stone	tomy	incision into
lithiasis	presence of stones	uria	'urine
lysis	disintegration		
megaly	enlargement		
meter	instrument that measures		

## ABBREVIATIONS COMMONLY USED

**aa** — of each  
**abd.** — abdominal  
**a.c.** — before meals  
**ad lib** — as desired  
**alb.** — albumin  
**a.m.** — before noon  
**amp.** — ampule  
**amt.** — amount  
**BCG** — bacillus Calmette-Guerin  
**b.i.d.** — twice a day  
**BMR** — basal metabolic rate  
**B.P.** — blood pressure  
**C.** — calorie; 100; centigrade  
**c** — with  
**ca** — carcinoma  
**cap.** — capsule  
**C.B.C.** — complete blood count  
**cc** — cubic centimeter  
**C.C.U.** — cardiac (coronary)  
                    care unit  
**cm** — centimeter  
**C.N.S.** — central nervous system  
**C.S.R.** — central supply room  
**C.V.A.** — cerebrovascular  
                    accident  
**D. & C.** — dilation and curettage  
**differential count** — dilute  
**disc.** — discontinue  
**dist.** — distilled  
**D.O.A.** — dead on arrival  
**ECG** — electrocardiogram  
**EEG** — electroencephalogram  
**E.E.N.T.** — eye, ear, nose,  
                    and throat  
**E.R.** — emergency room  
**etc.** — and so on  
**exam.** — examination  
**F.** — Fahrenheit; female  
**F. cath.** — Foley catheter  
**fl.** — fluid  
**G.I.** — gastrointestinal  
**Gm.** — gram  
**gtt.** — drop  
**G.U.** — genitourinary  
**gyn** — gynecology  
**h.** — hour  
**H.** — hypodermic  
**Hb.; Hgb.** — hemoglobin  
**HCT** — hematocrit  
**H<sub>2</sub>O** — water  
**hr.** — hour  
**h.s.** — at bedtime  
**ht.** — height  
**I.C.U.** — intensive care unit  
**I.M.** — intramuscular  
**I. & O.** — intake and output  
**I.V.** — intravenous  
**iss.** — one and one-half  
**K** — potassium  
**kg.** — kilogram  
**L.** — liter; left  
**lab.** — laboratory  
**lap.** — laparotomy  
**L.L.Q.** — left lower quadrant  
**L.M.P.** — last menstrual period  
**L.U.Q.** — left upper quadrant  
**M.** — male; meter; one thousand  
**ug** — microgram  
**mEq** — milliequivalent  
**mg** — milligram  
**min.** — minute  
**ml** — milliliter

mm — millimeter	q.2h. — every 2 hours
neg — negative	q.3h — every 3 hours
no. — number	q.i.d. — four times a day
nec — night	q.o.d. — every other day
N.P.O. — nothing by mouth	q.s. — quantity sufficient
N.V.D. — nausea, vomiting and diarrhea	R.; rt. — right
O <sub>2</sub> — oxygen	R.B.C.; r.b.c. — red blood cells
O.B. — obstetrics	Rh — Rhesus (monkey)
occ. — occasional	R.L.Q. — right lower quadrant
O.D. — right eye	s — without
oint. — ointment	spec. — specimen
OPD — outpatient department	sp. fl. — spinal fluid
O.T. — operating theatre	sp. gr. — specific gravity
O.S. — left eye	ss — one-half
O.U. — both eyes	Stat. — at once
p.c. — after meals	t.i.d.; t.d.s. — three times a day
Ped. — pediatrics	T.L.C. — tender loving care
P.I.D. — pelvic inflammatory disease	T.P.R. — temperature, pulse , respiration
p.m. — afternoon	ung. — ointment
P.O. — by mouth	U.R.I. — upper respiratory infection
p.r.n. — whenever necessary	vag. — vaginal
p.u.o. — pyrexia of unknown origin	V.O. — verbal orders
q. — every	W.B.C.; w.b.c. — white blood cells
q.d. — every day	wt. — weight
q.h. — every hour	



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